

Hydrologia Chymica:
OR, THE
CHYMICAL ANATOMY
OF THE
SCARBROUGH,
And other
SPAWS in YORK-SHIRE.

Wherein are Interspersed,

Some ANIMADVERSIONS upon

Dr. WITTIE's lately Published Treatise of the SCARBROUGH-SPAW.

Also, a short Description of the SPAWS at Malton and Knarsbrough.

And a Discourse concerning the Original of Hot-Springs and other Fountains: With the Causes and Cures of most of the stubbornest DISEASES (either Chronical or Acute) incident to the Body of Man,

Also, a Vindication of CHYMICAL PHYSICK; where a probable way is propounded for the Improvement of Experimental Philosophy: With a Digression concerning an Universal Character. Likewise a short Account of the Principles of all Concretes, whether Vegetable, Animal or Mineral.

Lastly, is subjoyned an *Appendix* of the ORIGINAL of SPRINGS; with the Author's *Ternary* of Medicines: And the Epilogue to the whole, of the Essence of the SCARBROUGH-SPAW.

By *W. Simpson, Philo-Chymico-Medicus.*

Ex Aqua Omnia.

London, Printed by *W. G.* for *Richard Chiswel* at the Two Angels and Crown in Little-Britain. 1669.

To the READER.

Candid, Friendly Reader;



Having made to my self, some experimental essays of the Mineral Ingredients of the *Spaw* of *Yorkshire*, amongst which that of *Scarborough* I found to be most eminent, being better Saturated, and more impregnated with Mineral Salts, than the rest; and meeting with *Dr. Witt's* Booke, being a description, chiefly of that *Spaw*, did not a little wonder to see a draught of such Mineral ingredients, most of which I had not observed to be therein. I say, not being satisfied herewith, it put me upon bringing his constituent Principles of the *Spaw*, to the Test; and to make a further scrutiny into the natural ingredients of that Spring, that upon more thoroughly made experi-

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ments, I might the better be convinced, whether I was in an error or no; or whether indeed, those five *Mineral Ingredients*, that Dr. Wittie had ascribed to that *Spaw*, were the *Essential Principles* thereof: To which purpose I made some *Animadversions* upon his deposited *Principles*.

The first sheets whereof, I shewed to some ingenuous acquaintance of mine, (who longed to see some Experimental Trial of the *Minerals* of this *Spring*) with which they seemed to be taken, and gave me encouragements to go on, and to compleat (if I could) what I had begun. Those few first sheets I let lie dormant by me all the Winter; in the Spring I revived them, and set down some *Experiments* I had made the last Summer; also I made some fresh *Experiments* of the *Mineral Earth*, found upon the Bank near the *Spaw*, &c. and after I had finished
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the discourse of the *Mineral Ingredients* thereof, I saw a necessity of treating of Diseases; (*viz.*) which were curable by the *Spaw*, which not: and what observations I have made therein, whether they be consonant or not to truth, and the late discoveries made, by the *Experimental Practice* of *Physick*, is left to thee (*Judicious Reader*) to determine. I confess, I have not been so large in my discourse of Diseases as I might have been, or as a matter of that nature did require, not intending to swell this peice into a large volume; nor indeed was I willing (at present) to put down all my *Observations* thereon, reserving many of them to another seasonable opportunity, as occasion shall offer and these find acceptance. I have, I confess, in this *Treatise* made some large digressions, and have not wound my self back again by so uniform

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a clew , as I could have wish'd : And indeed upon a review I espie some discernable flaws , and chinks in the junctures thereof ; which are now too late to amend, nor could it be perform'd, unless it were by taking some parts thereof in peices, and cementing them afresh , which now cannot be done : yet they are such as a running eye will not easily discover. As to that digression , of the improvement of Philosophy by a Universal Character, it was (I confess) done before I had seen any thing of Dr. *Wilkins's* Book to the same purpose ; who certainly hath design'd such a clear Methodical draught thereof , as that without doubt , he hath outdone all that ever we heard of, that went before him : Which if it take , and get footing in the world , will (without a peradventure) prove the most facil direct road , to the improvement of the
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natural parts of man, in the true outward *Scientifical* knowledge of things, by this Universal Character. For by this invention, Children (and others) will be train'd up, not in the knowledg of letters, or words alone; but in the true *Characteristical* knowledge of things themselves, according to their most External distinguishable. *Signatures*: which if it take, will save posterity a great deal of time, which we have with little fruit spent at the Schools.

As to the *Appendix* concerning the Original of Springs, when I sent my papers to the press, I had then no thoughts to have discours'd thereof at this impression; but finding that I had an opportunity given by the necessary delayes of the Press (taking more time to do it in, than I at first expected) I set upon it: but coming too late to be inserted in its right place, *viz.* immediately before the

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discourse of Hot-Springs, the Press being gone beyond that part, was forc'd to bring it in as an *Appendix*

To which are annexed other little additions, which before were omitted, and therefore refer to the Page, and line of the book, where they should follow. As to our *Ternary* of Medicines, which answer the general Indications in Physick, for the cure of most Diseases; as also our *Epilogue*, of the Essence of *Scarborough Spaw*, I shall refer what I have said therein, to matter of Experiment it self. If any reflections have happen'd, they are more then I wish had been, but I hope, they will not be found immodest; for he that writes concerns of this nature, had need lay a good foundation of Experiments, so that being thereby backed (as I may say) or strengthned, he need not much fear the Counter-assaults of others. And in as much as
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it is truth evinced by matter of Experiment, that I contend for, therein I find satisfaction, in what I have done; and truly I have meted no other measure than I would expect in case any Writings of mine should be found as equally naked and fenceless, and consequently as expofable to future Criticisms: For any other hath the liberty of disproving what I have wrote, and that by good reason too, so he do it fairly, by more demonstrable matter of *Experiment*. The same liberty hath Dr. *Wittie*, if he please but to grant himself it, in vindication of what he hath Wrote; yea, and in defence of his *Methodical Art* too. As to this *Chymical Practice of Physick*, of whose vindication I have succinctly wrote, many *Physicians* now at this time (and more and more daily) do make it their way of administering help to the Sick; so that (doubtless) in a little time, it will gain much

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much ground, upon the World, and will at length naturally worm out the *Galenical* Method. For an active plodding *Genius* is now at work, which is bringing all former received opinions to the Test, and examines them by matter of Fact, in *Experiments*; and what is found consonant to Truth, made forth by collateral *Observations*, is approved, the rest (as frivolous and uncertain) is rejected. And as to what I have propounded, in order to the raising a Structure of *Natural Philosophy*, by the Collection of *Experiments* of all sorts, &c. though it may seem to be but an *Utopian Product*, better discoursed of then performed; yet may it probably, and not unaptly, be looked upon as a direct, even Road, toward a real *Science of Experimental Physiology*: to the promoting and perfecting of which, the *Pyrotechnical Art* is of no small use,
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by *Anatomizing* and taking in pieces the Bodies of *Concretes*; thereby not only viewing their primitive constituent *Principles*, but also the great variety of new *Products*, resulting therefrom, by the mediation of *Fire* and *Ferments*: so that no small insight is got hereby, into the hidden *Secrets* of *Nature*, which is seen to display her self wonderfully, in the great variety of *Productions* in the *Mundane System*, amongst which, the Medicinal *Concretes*, whether *Vegetable*, *Animal* or *Mineral*, are not of the least concern. All which (by this noble Art of *Chymistry*) are laid open to view, their *Insides* turn'd outwards, their *Feculencies* separated, their *Heterogeneities* composed or removed, their *Virulencies* corrected, their *Crudities* maturated, and their Medicinal *Virtues* exalted and enobled; either into *specific* Medicines; or into such as generally

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nerally absterse the Primary *Digestions* and *Sanguineous Vessels*; or lastly, into *Chatholick Medicines* (such I mean) whose virtues are of a larger extent, reaching not only to the *absterfion* of the Vessels, and removing the *Heterogeneities*, which set the Blood and other Juyces of the Body (in their severall parts) into a spurious *Fermentation*: but also doth illuminate (if I may so say) the *Aura vitalis*, with a *balsamick Ray*, which puts a new Spring into the *Digestive Powers*, which have been enfeebled by the strong assaults of a powerful *Disease*: For the *Ferments* I look upon as the Springy Powers, that contribute to the *Fabrick* of the *Sanguineous* and *Nervous Juyces*, with the Inhabitants thereof, the *Vital* and *Animal Spirits*. As to Chymical Authors, there are not many that I much value; Those who give *Recipes Verbatim*, with large *Encomiums* thereon, are most

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most to be suspected, Such are *Amynsicht*, *Crollins*, *Beguinus*, *Lybavius*, &c. Some of which admire *Petit Preparations* like *Panacea's*, and give of them such large Descriptions, as if they were *Arcana's* in earnest; Others take *Processses* out of *Paracelsus*, who leaving (perhaps) the *Menstruum* undiscovered, where-with the *Preparation* should be made, make their own conjectural additions of *Menstruums*, never thought on by the first Author of the *Invention*; the most Candid and Experienced of whom is *Hartman*, *Rhenanus* and *Quercetane*: But of all that write Chymical *Recipes*, the very best and most solid Writer, that I meet with, is (in my judgement) the ingenuous *ZVELFER*; witness his *ANIMADVERSIONS* upon the *Augustane DISPENSATORY*, and his *MANTISSA HERMETICA*, and his *APPENDIX*; though indeed they

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they do not altogether so much respect a through enumeration of most *Chymical Experiments*, as a rational and judicious Correction of the *Pharmacopæan Preparations*. Not much inferior to him is the ingenious *Le Febure* in his *Compendious Body of Chymistry*, who hath wrought pretty much; yet hath therein put down more than he hath wrought. The best of them, for a general Collection of *Recipes*, out of the farraginous mass of *Writers*, is *Schroder*: But in order to the more noble *Chymical Arcana*, *Essences*, *Maturated Magisteries*, and complete *Medicinal Elixirs*, none that I meet with out-strips *Paracelsus* and the profound *Helmont*. As for *Paracelsus*, he was, no doubt, Master of great *Chymical Secrets*, witness the *Liquor Alkabeſt*, or *Circulatum Majus*, his *Mercurius fixus Diaphoreticus*, otherwise called *Aurum Horizontale*; also the *Arcanum Corallinum*,
Tinctura

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Tinctura Lilii, *Mercurius Vitæ*, and the fixt tinging Oyls of Metals. The last of which (I find) he hath much borrowed out of *Isaac Holland*, and probably had the knowledge of the rest, from some *Arabian* Philosophers themselves, or their Books; for amongst them was the *Liquor Alkabeſt* most known: which was the *Medium* by which, most of his Mineral and Metalline *Arcana's* were performed; as his Preparation of the *Ludus*, his *Tinctura Lilii*, his *Sulphur Veneris*, &c. yea, and of Vegetables too, witness his Preparation of the true *Elixir Proprietatis*, which was (as *Helmont* saith) made by the help of the *Alkabeſt*; and so Prepared, did cure the *Asthma*, *Epilepsie*, *Apoplexie*, *Palsie*, *Atrophy*, *Tabes*, &c. And as for *Helmont*, he goes so far out of the road of vulgar Chymists, as that he scarce gives any *Recipes*; what he gives is *Sparsim*, and wrapt up occasionally

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caſionally amongſt his Writings, without any formal Proceſſes; his beſt *Arcana's* are but darkly ſet down, his choice Preparations are only cursorily inſerted, and the very *Baſis* of his *Grand Solvent*, but barely hinted: ſo that a Phyſician (if he expect any help by him) ought to read him often, and to compare his Writings, and thereby he will find no ſmall Light to guide him in his *Chymical* Reſearches. And though *Helmont* be accus'd, for defacing the *Galenical Structure* of *Phyſick*; and not ſetting up a better in its place, by giving (as it were) a *Chymical Diſpenſatory*: yet he is not much to be blam'd herein, if we conſider, firſt, That he not only pulls down the *Galenical Theory*, but rears up a better, whereby Diſeaſes may the better be known, from their Eſſential Cauſes, and by their natural *Symptoms* and *Products*; but alſo gives conſiderable hints of
more

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more noble *Preparations*, whereby Diseases may probably be Cured, much more effectually than by the common *Methodical Practice* of *Physick*; for it would have been accounted no less then Imprudence in him, to have communicated to the World, the process of (suppose) the *Alkabeft*, in a few lines plainly, and that in a quarter of an hour, which had cost him the Pains and Study of most part of Thirty Years: This would have made ingenuous Persons idle, by putting that into their hands of a sudden, which should have been the result of many Years Tryals. But he (like a Philosopher) acteth more wisely, obscures his expressions, and veils his hints to such noble *Arcana's*, thereby inciting Ingenuity putting an edge and vigour on the, otherwise satiated, and therefore dull desire, to further attainments. Besides, such forestalling of Ingenuity, would
a prevent

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prevent the Invention of other intermediate *Menstruums* and curious *Preparations*, that might be, and are occasionally found out, by search, and unwearied *Tryals*. Therefore our profound Author is not at all to be disliked, that he hath not reduced his Medicinal *Arcana's* into a *Methodical Dispensatory*. It's enough that he hath given us such fair hints, which may be sufficient spurs to our Ingenuity, to set us to work; that when we find out any thing of real worth, by our own industry, we shall be able to put a value thereon.

But to conclude, No flattering *Encomiasticks* shall usher in this work, nor *pedantick Rapsodists* attend these lines; nor need we *Castæ Napæarum*, to adorn our *Water-Nymphs*; nor let the Reader expect our contemplation upon our *Water-Works*; nor yet any *Chronogram* or *Anagram* to sound abroad our fame; nor shall we court
great

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great Patronages to cast a favourable aspect upon it : *Prævalet ipsa veritas, imo in æternum prævalebit.* For if the substance of the Discourse, and what the Piece it self offers, give not matter of entertainimēt for the Reader, whose *Genius* bends that way, without such previous antick *Stage-Playes* : Or if it sound not Harmoniously in the Readers Ear, without such pratling *School-Boy-Preludes*, let it be thrown by, and for ever buried in Oblivion.

If I have writ any thing in this following *Traçtate* (Judicious Reader) worth thy while, it is well : If thou have but as much pleasure in reading, as I had in writing, it is enough : If it find any encouragement abroad, it may probably brood again. Peruse and censure not, till thou hast run it through ; and then do as thou seest cause.

Farewel,

Thine

W. S.

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HYDROLOGIACHYMICA:

OR

**The ANATOMY
OF
SCARBROUGH SPAW.**

BEING

Some Animadversions upon
Dr. WITTIE's Discourse of
SCARBROUGH SPAW.

Pars Prima.

SECT. I.



Having lately seen a Tractate;
Intituled, *Scarborough Spaw*,
or the Description of the
Natures and Virtues of the
Scarborough Spaw; Written
by Dr. *Wittie*, being the se-
cond Edition by the same
Author; who therein under-
takes to Discourse of the
Nature of that, and other Mineral Waters; to omit
all prolixity, we will examine his deposited Prin-
ciples of that Mineral Spring.

2. He tells us of five Ingredients of which this water partakes, and hath its Virtues from, which are the Constitutive principles of this Spring as he supposeth, and those are, Vitriol, Iron, Allom, Nitre, and Salt; with these he currently passeth along through his book, where he hath occasion to elucidate the Virtues of the Well, and make all the five *Volens nolens*, contribute to this Spring.

3. First, as for Vitriol, the Doctor might have distinguished whether he understood it to be *Vitriolum martis*, or *veneris*, viz. the Vitriol of Iron or of Copper; for if it be of Iron, then is one of the principles, viz. Iron Superfluous, because the Iron would be the Metalline part of the Vitriol, in as much as every Vitriol is made of an Essurine Salt, dissolv'd in the Subterranean veins of a Spring, which passing along the Menera of a Metal, doth *lambere venam*, licks upon that Vein of Metal, whether Iron or Copper, which it partly dissolves into it self, and carries it (as I may say) in its belly to the visible appearance of a Spring; which evaporated, gives a Vitriol, either of Iron or Copper, according as the Metal was that it passed through.

4. But if the Vitriol in *Scarborough Spaw* be of Copper, then would the operation of the water be most what Emetick, or Vomitive, because the body of Copper being dissolv'd by an Essurine liquor (save that of the *primum ens Salium*, or liquor Alkahest of *Paracelsus* and *Helmont*) becomes desperately Emetick, and can but with very great difficulty, by the Chymical Art, be separated from that Essurine Salt, which hath coagulated it self thereon.

5. Again, If it was such a Vitriol, the other ingredient of Iron, would by their mutual imbraces be ting'd, and almost transmuted into Copper, which I have found by a strong decoction of Iron in Vitriolin

olin Water; but to omit that, Let us suppose that there were a Vitriol of *Venus* dissolved in this Spring, and in so small a proportion, as being mixed in a great quantity of water, viz. of 3 or 4 Quarts, which is the quantity Patients frequently drink, as not to work frequently by Vomit, but most what by Stool; and that the Purgatives property was from the mixture of this Vitriol and other Ingredients, named by the Doctor.

6. This being granted in favour of his Ingredients or Mineral Principles; then let us see what will be the sequel, viz. whether or no, we may not lay by as useless, one of his Principles I am now discouraging of, viz. Iron, as an impertinent and insignificant Ingredient, I mean, as to the body of it.

7. For if the Essurine salt dissolved in the Water-Spring, meet with a Vein of Copper in the bowels of the Earth (which Essurine Salt is always required for the making a Vitriol, of what sort soever) fretting thereon dissolves it, and at the same time that acidity is coagulated upon the metalline dissolv'd parts [*solutio & coagulatio fiunt unico instanti; una eademque res solvit ac à solventi coagulatur*] and so both together become dissolv'd in the solitary Spring Water, in an almost indissolvable nexure; then, and not till then, is the action of that Essurine acidity terminated, so as it can act no more; and though it should, in the secret meanders of the Earth in its incircling perambulation, meet with a Vein of Iron, yet could it take nothing thence, because it had already lost its sting, I mean, its fretting Salt had satiated it self in *coro metallico*, in the embraces of an already espoused Metal.

8. *Mars* cannot be dissolv'd and appear in the form of a liquor, without a dissolvent; but this

dissolvent, viz. the Essurine acidity, being already satiated and turned into a Vitriol, to make up one of Dr. Witties precanious Principles, is not at leisure to make another of them, unless we grant such an indulgence to Nature, which she never was yet so kind to her self as to take, I mean to dissolve Mineral or Metalline Body, without an agent proper for that purpose.

9. So that indeed we find a flaw in the main Timber of his Building; an inconsistency of two of his chief Principles of this Mineral Water, Vitriol and Iron; that which makes the one, disannuls the other; so that certainly they are not of the Fraternity of this *Spaw*, however we come to find them thus thrust in by head and shoulders.

SECT. 2.

I. **T**HE Doctor undertakes to discourse of Vitriol, and first he gives us an account of the several sorts, not such as he had seen, but such as he saith (*Sect. 12.*) late Writers name, viz. three sorts, viz. *Roman* Vitriol or Copperas; which two I do not understand to be *Synonima's*, for *Roman* Vitriol is factitious, and adulterated with other mixtures, to make it shoot into curious figures, and to heighten the colour for pleasing the Eye, having great quantity of the sluggish body of Copper in it, which is the main Ingredient, but very languid as to Spirits, wherewith natural Vitriol is more replete, as by distillation of both we have found; and *Helman* (mentioning a distillation of it) saith, *dedit parum spiritus ignavi acidi: cessavit mox infra paucas horas omnis spiritus, &c.* as for Copperas, it is a name most proper to most sorts of natural Vitriols, *cupre-*
rosam

rosam i.e. *cuprum erosum*: The second sort is *Cyprian* Vitriol, partaking of the nature of Brass, Copper I suppose he means; for Brass is an artificial Metal from Copper, by the addition of *lapis calaminaris*. The third sort, he saith, is found in *Liguria* somewhat black, by which Iron may be turned into Brass or Copper called *Colcotar*; where by the way take notice, that the Mineral Salt, being separated from the Vitriol either of *Mars* or *Venus*, the remaining *crocus* or *calx* of both may be and is called by the name of *Colcotar*, the one being a red colour, viz. that of the Vitriol of Iron, the other a yellow colour like *Occar*, viz. that of the Vitriol of *Venus*; when both their Mineral Salts are separated by an artificial menstruum known to us, and that without any force or violence of fire; both of which sorts I have by me.

2. To me all natural Vitriols seem to be reducible indeed to three, viz. to that of Iron, Copper, and *Vitriolum album*; that of Copper admits of great variety according to the degrees of plenty and purity of the Effurine Salt, which is (*Sulphuris embryonati partem innatus*) an unripe birth of a Sulphur *in fieri*; being far removed (as *Helmont* saith) from a Metallick nature, and nearer to the *primum ens*, which indeed gives the medicinal virtue to Vitriols; I say, according as Mineral Vitriols or Metallick Solutions, are enriched more or less with this Effurine Salt, *propria sponte illi innatum*, so are they reckoned to be better or worse, as to Medicinal use. The best of which are accounted the *Cyprian*, *Hungarian*, or *Goslarick*, or *Dane* Vitriol, being pretty well saturate, with plenty of this Effurine acidity.

4. Natural Vitriols I said, because many artificial sorts may be made; among which *Roman* Vitriol, and

viride eris may be numbred; which last being cristalliz'd by Solution, Filtration and Evaporation, may be brought to fine Cristals by the addition of Allom, &c. which may much resemble the *Roman* Vitriol.

S E C T. 3.

First, He is pleas'd to reckon up four ways, where-
by Water may imbibe the nature and virtue of a Mineral or Metal.

1. By receiving its Vapour; his instance is, Water standing somewhile in a brass or iron Kettle; will taste of the brass or iron: to which I say, *viz.* That no metallick body, as such, doth or can give a Vapour to a simple elementary Water, as long as the Water is homogeneous in its parts. Minerals indeed, being Metals in *solutis principiis*, may, whilst such, give an odour (for so I had rather, and think more properly call it, than a Vapour) to Elementary Water; as for instance, Antimony and its Preparations, *viz.* either the *crocus metallorum* or reguline part, can give an emetick property to Water or Wine.

So natural Vitriols, which are but their Metals *in fieri*, or *in primo ente reservato*, can communicate the like emetick odour (though indeed there is some small Solution) in Water.

2. But take the complete perfect Metals of these Minerals, and we shall find them such compact bodies, as they have no Vapours, nay scarce any odour, to any simple Elementary Water; for instance, take Lead, which is the Metal of its Mineral Antimony, being the complete Metalline Body of that Mineral, boyl Water *ad ævum* in it, so as it be simple Water, and hath not undergone the least degree of putrefaction (for then begins an analytical resolution, set a work

work from a spurious acidity) and you shall find the Water to have contracted no saturnine impression at all; but if the least acidity either from the Air, or admixture of any acid liquor whatever, impregnate this Water, it shall make a Solution of the Metal, and turn it self sweet, more or less, according to the degree of the sharpness of that acidity, till at last it come to a *Saccharum Saturni*, or Sugar of Lead.

After the same manner, the perfect Metals (perfect I mean *in specie*) of Iron or Copper, being by frequent fusions brought to their highest degree of Metalline compaction, do no longer give any solution of parts, odour, or vapour to simple Water, as they did whilst in *principiis solutis*, viz. in their Minerals or Vitriols, the which, daily experience evinceth. Do we not frequently boyl our Water for Broth, and most of our potable Liquors, in Iron, Copper or Brasse Vessels, and that without the least taste of any of the Metals? which Metalline Vessels as such, may, though made of Silver or Gold, give no more vertue, sapour or vapour, than the Metals of Glasse would do to the same Liquors boyled therein; if any taste happens, it is from some adust foods burnt to the bottom, or sides of the Vessel, or the like sluttish uncleanness.

3. In vain therefore are all our decoctions of Silver or Gold in Water, Milk, or Broth; the Cordial help thence expected as frivolous; for all compact Metalline bodies, must have proper and peculiar *Menstruums* to unlock them, if any medicinal *Arcanum* be thence expected.

4. The Doctor tells us, That by this way of vapour, the *Scrbrough Spaw* partakes of Vitriol, and of Iron: That Vitriol may dissolve in simple Water, we have before granted; but that it should give a va-

pour to the Water, I understand not. To make a Body resolve it self into vapours, or minute parts of the like nature with the whole, is required, as I apprehend, either an intrinick or extrinick heat, or fire; which of these two, the Vitriol of *Spain* water hath, the Doctor would have done well to have assign'd: If he intend an intrinick, *Ubi iste focus, ille vulcanus ubi*; what Rule acts it by, that it should so constantly and strongly resolve the Vitriol into minute vaporous parts, which according to the nature of a vapour, should take wings, and quickly flie from this Fountain, and yet the Carkass of Vitriol to remain; for he saith nothing to the contrary, but that it is actually and substantially Vitriol still; it so, then the vapour is Vitriol, and the Vitriol a meer vapour; for the way and means by which he makes the Water partake of Vitriol, is by its vapour; and yet this vapour is Vitriol, being one of his assigned principles: What to make of this, or how to make it hang together, really I cannot tell.

5. If he understand an extrinick heat, it must surely be from the Sun, which it must either resolve the Vitriol into a vapour, where the spring appears *sub dio*; or if its heat penetrate the Superficies of the Earth, he must assign how deep its Rayes piercerh; and that the Vitriol must of necessity be wrought upon at such a depth within ground, which he may do well for satisfaction, and strengthening his principles, (lest they run to ruine) assign its place, and manner of conversion into vapour, otherwise one of his props will of necessity fall under him.

6. As Vitriol (how true judge) so Iron, he saith, gives it self by a vapour to the Water; which that it doth not as a compact body, of that Metal we have already sufficiently asserted, inasmuch as Iron being a solid

solid body, is not at all apt to vapour; and if it should, whether or no that were yet Iron, which according to his Thesis must of necessity be, because a constitutive principle; so that consequently Iron, before it become an Ingredient of the *Span*, must be resolv'd into a vapour; but by what Agent, I wish the Doctor would signify: And when it is a vapour, how comes it to reassume a body, which it must do to make it a real principle? and what is it that bears up the body of the Iron in the Water, that it falls not like other Iron, or a *Calx* to the bottom? What makes the difference betwixt it and a *Crocus*, which, if put into Spring water, sinks to the bottom like Sand, and gains no solution? These things he ought to have been clear in, before he imposed that upon the World, as an Ingredient of this Mineral Water.

7. But to make up the matter, he tells us, That not only by Vapour, those two bodies, Vitriol and Iron become principles; but also something of the concrete juyces, and substance of them both, are given to the Water. Here the Doctor would almost make us believe, That he was inclinable to Philosophise; for he is got as far as the concrete juyces, *viz.* the Metals *in principis solutis*, or *in fieri*; which indeed whilst such are communicable to any current vein of Water, which glide along the Surface, or pervades the more soft body of the Mineral; at leastwise to a current of Water that hath but got the least actuation from an Essurine Salt; but that he spoils all again, by bringing in Vitriol and Iron as two distinct things, which, as we shewed before, are but one in any subterranean Mineral solution.

8. Had the Doctor spoken of the Minera of Iron, and so to have been in its concrete juyce, and omitted that of Vitriol or had he spoke of Vitriol as the Minera

Minera of Iron, and so have understood of its concrete juyce, rejecting the body of Iron as impertinent, we should then have thought he had Philosophis'd in good earnest, as having thence some permanent principles, from whence he might have rais'd a noble Structure of Theory.

9. From the vapours of Vitriol (he saith) the Waters hath its inky smell, and acid taste; and here, methinks, his vapours flies at random, it's a thousand to one but they may in a little time quit their paces from this Well, and leave it to be possess'd by some other more natural Native: I cannot pass the Notion without a smile: But to be serious; First, What is it that gives an inky smell, or rather makes Ink? Is it not a solution of Vitriol precipitated, or made opacous by the addition of Galls, whose sticktiness makes the diaphaneous texture of the Particles in the vitrioline solution desert their former posture, and muster in a confus'd opacous manner, filling those interstices with solid Particles, which before were kept transparent by the fluid parts of Water equally tempered, and not a vapour from the Vitriol, since there wants an heat in either Agent which might procure a vapour.

10. From the concrete juyces of Vitriol, Iron and Allom (saith the Doctor) I think it hath its azure sky colour, by which it seems, as if precarious Philosophy were in fashion with the Doctor; for in many places of his Book, you will find his Assertions and Solutions of *Phænomena's* (if I may so call them) to be merely precarious [I think] and all for want of a good *apparatus* of Chymical, or other sorts of Experiments; the want of which doth ever and anon make him, *inter multa vacillare*, as not having *Ariadnes* clew of Experiments to guide and extricate himself

self from Labyrinths, he is ever and anon falling foul upon those two Rocks of Vitriol and Iron; and I wish he suffer not Shipwrack upon them, and in the conclusion lose them too.

11. That it wants not the substance of Iron, is (he saith) apparent, in that after it hath been boyled, and put into Oken Vessels for some while, there appears a reddish Sand inclining to yellow, which he saith is nothing else, but *Mater ferri*, or Rubrick.

12. If so, then what becomes of his other grand principle Vitriol? for every Vitriol hath a *Colcotar*, or *Terra Metallica* in it, which may be made either yellow, red, or purple, according to the several ways of separating its connate vitrioline Salt, as I have before hinted, how will he distinguish between the *Colcotar* of his assigned Vitriol, and this *Mater ferri*, being according to his Assertion both distinct Ingredients? surely all the Art he hath, can scarce hinder, but they will coincide, and forfeit their marks of distinction; and so we may further Query, how came the Doctor to know that both Vitriol and Iron were Ingredients, seeing the badges of distinction clash? but surely he took them in, pitying to separate Kinsmen.

SECT. 4.

1. **T**He second way whereby water may im-
bibe the nature and virtue of a Mineral or Metal, is (he said) when some of their juyce is dissolv'd in the Water, and that is while the Minerals are but young, *in fieri*, or *in solutis principis*. Here indeed the Doctor hath spoke like a Philosopher, and hath hit the nail exactly on the head, for this is
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the most probable way of all for Minerals or Metals, whilst in *succo primitivo, in ente primo solubili*, to communicate themselves and virtues to current streams of subterranean Channels of Water, they are only then fit to propagate themselves for Medicinal help in Springs, that thence become and are truly called Mineral Waters.

2. Nay, if the Metals themselves should be forc'd to open their treasures for Medical *Arcana's* for the health of Man (with which they are doubtless nobly enriched) it must be by a reduction of them, by some powerful *Menstruums* into their *prima entia*, into their first liquid principles and juyces, whereby they would notably penetrate our very constitution, and therewith, *quadam Symphonia colludere, abstergerendo, penetrando ac illum inando Archaum vitalem, ex morbis tum acutis tum chronicis solvendo.* But *non nobis liceat esse tam differtos.*

3. The third way, he saith, is by corrosion of the substances of the Minerals mentioned by *Galen*, and this is performed by the help of the concrete juyces, which corrode and extract Mineral Substances; here we find a *Galenical* way of solution of Minerals in Waters, and so indeed it seems; for as its out of their road to discourse of these Mineral solutions, so their notions must be confus'd because not grounded on true chymical experiments, which they are not at leisure to take notice of.

4. For you see the Doctor saith, that these concrete juyces, corrode and extract Mineral Substances, which tacitly involves no less than a contradiction; in as much as these concrete juyces are Minerals *in fieri*, or as he saith *in principis solutis*, and yet he would have those Minerals to corrode and extract Minerals, the same body extract the same body. In every extraction

traction is required a *Menstruum* or *Solvent*; and a body to be dissolv'd; but here, according to his Theory, the *Solvent* and *Solvable* are both one, the Agent and the Patient the same; which how he could solve from clashing, gladly would I learn.

5. But he goes on further to illustrate this his implicate contradiction, telling us, that this very way of extraction, is done by such as have imbibed Vitriol at the first; for they do thereby (saith he) become hungry and corrosive, and so the fitter to take into them any other Mineral that lies in their way: thus he thinks he carrys it away clearly; but stay, you may remember we told you (*Señt. 1. No. 7.*) that an Essurine Salt dissolv'd in a Water Spring, meeting with the Minera of any Metal that it can work upon, turns it into a Vitriol, and that either pertaking of Iron or Copper, according to the nature of the Minera it meets with, which done, its dissolving property is terminated, and can ask no more; therefore the Water having, according to the Doctors supposition, imbibed Vitriol, is not at leisure to make any further corrosions, or extractions, and so the Water would prove barren, as to any other Minerals.

6. To confirm all, as he thinks, he seconds his Theory with an Example, which deserves an exemplar remark upon it; it's thus, An Example whereof, saith he, we see in *Aqua fortis*, which will corrode the substance of another Metal, and convert it into its own nature; and there methinks the Doctor was no great Chymist, if he had, he would surely have blusht to have own'd that *Aqua fortis* having corroded a Metal, should convert the Metal into its own nature.

7. For dissolve either Copper or Iron, Silver or Gold, or any other Metal in an *Aqua fortis*, and you shall have all the Metal again (*idem numero & pondere*)

re) either by precipitation with a *Lixivium* or Oyl of *Tartar per deliquium*, or by evaporating the corrosive *Menstruum*, then edulcorating, and firing strongly in a crucible until it flux, and you shall have it return'd you the same Metal as at first.

8. So that the Metal corroded by the *Aqua fortis* was not (according to the Doctors fallacious assertion) converted into the nature of the *Aqua fortis*, having its parts only forcibly severed by the fretting corrosive, reunifiable, after the separation of the *Menstruum*.

9. But it seems the Doctor is willing to take principles upon trust, and therefore his conclusions and examples (which should indeed be the most demonstrative) prove invalid and unsatisfactory, to a judicious eye that takes no notice of vulgar principles further than consonant to truth.

10. He supposeth (as far as I can gather from his manner of writing) that because when a Metal is dissolv'd in an *Aqua fortis*, it seems to the eye to be all liquid, and as it were turn'd into the form of the very *Menstruum*, that therefore it is converted into the nature of the *Aqua fortis*; which it's true a vulgar judgment, instructed no otherwise than by natural Opticks, would apprehend as the Doctor doth, that it, viz. the Metal, is converted into the nature of the *Aqua fortis*; but let the same eye proceed, and view it when the *Menstruum* is separated, and it is reduced *statu quo prius* by fire, being forced thereby to deposit its corrosive mask, will confess it was but *deceptio visus* all this while, viz. that the Metal howsoever corroded by the *Aqua fortis*, was the same Metal still.

SECT. 5.

THe fourth and last way whereby water imbibes the nature and virtue of a Mineral or Metal, is, as he saith, by confusion, changing the substance of the Mineral into Water: This solution I must needs confess is very confus'd, jumping so narrowly with the precedent, as that it scarce misseth it an hairs breadth, and therefore must needs bear the name of confusion, *frustra fit per plura quod fiat per pauciora*; for here he is of the same judgment as before; that a Mineral may be converted (to use his own term) into Water.

2. But it may be there is a mystery wrapt in it; perhaps Dr. Wittie deeply Philosophiseth, and we are not aware of it; for now that I recollect myself, I remember Paracelsus and Helmont tells us of their grand Liquor *Alkabeft*, which Helmont saith, *Cuncta natura corpora penetrando subtrilliendoque transmutat*; and further saith, that by it, (*viz. primum ens salum*) *omne corpus* (puta *Saxum*) *lapidem, gemmam, silicem, arenam, marcasitam, argillam, terram lapides coctos, vitrum, calcem, Sulphur, &c.* (much more Minerals, such as the Doctor means) *transmutari in salem actualem, aequiponderante suo corpori, unde factus est. Et quod iste sal aliquoties cohobatus in sale circulato Paracelsi; suam omnino fixitatem amittat tandem transmutetur in liquorem, qui etiam tandem in aquam inspidam transit, & quod ista aqua aequiponderet sali suo, unde manavit*; by which Liquor transmuting all bodies, whether Stones, Metals or Minerals into a Salt, which cohobated with Paracelsus, *Sal circulatum* (which by the by, is *primum ens Mercurii Liquidum cum primo ente*

ente salis factum) is at length transmuted, or turn'd into an insipid Water.

3. Yet certainly if he had had such a *Menstruum*; we should have heard of it ere this, but I see not the least foot-step yet in his Book that might give the least hint thereof; by which I gather he is not so well vers'd amongst Pyrotechnick Writers, as to insinuate so secret and Philosophical transmutation of Minerals into Water.

4. It is so far I fear from a Philosophical, as that I doubt it may prove a Rustical notion; *viz.* to judge a Mineral or Metal transmutable into Water, because it so seems to be to a vulgar eye; the body of the Celestial Sun to be no bigger than a Bushel, or a Cart Wheel at the most, because appearing no bigger to the same common eye.

5. He would confirm this vulgar Doctrine (Vulgar I call it, because fitted only for Rusticks, whose reason outstrip not their sense; but for a profest Physician, should me-thinks have the pole of his reason more elevated) I say he would by the instances of Salt, Nitre and Allom confirm this his Doctrine (to be found nowhere but amongst vulgar errors) instancing and saying, that Salt and Nitre will both so perfectly turn into Water (and Allom also, although it is not so fusible as the other) a little being put to them, as if they were nothing else.

6. By which I perceive the Doctor doth really believe that when Salt or Nitre is dissolv'd in Water, that they are no longer Salt or Water, but really transmuted, or (as his own term is) converted into Water. O facile transmutation! what need we cast about, at such far distances to inquire after the possibility and truth of transmutation of Metalline or Mineral substances, when the Doctor hath got them

so near at hand, can turn Mineral substances into Water, and every whit as easily reduce them into what they were before.

7. For he hath given a positive resolve of the Quere of transmutation, having absolutely determined, that these Salts do perfectly turn into Water, according to his own words, a little Water being put to them; which through resolution of the point, is totally exclusive of either his *magis* or *minus*, so that according to his opinion, Salt put into Broth becomes Broth, and Sugar dissolv'd in White-wine or Sack, becomes White-wine or Sack; whereas any of these Liquors evaporated or distill'd, he will find besides the whole body of the waterish part saved in the receiver, the body of Salt or Sugar left entire in the distilling vessel, the very same as before.

8. This peripatetick notion, I look upon no otherwise than that other analogous to it; where in the same *Sect.* he saith that Water would evaporate into Ayr, supposing a transmutability of Elements; as if Water when evaporating were not as really Water, though its parts undergo a large extension, as when the parts are united in a fluid body, in that texture of parts which the body of Water makes up; for save in a receiver, that which he imagines evaporates into Ayr, and you shall find, and so shall he too, that it is no way distinguishable from that it was before, Water still and not Ayr; so Salts, Sugars, or what else dissolvable in Water, are the same as at the first, though appearing under the form of Water.

9. For whatsoever is dissolv'd in Water, if upon the superfusion of any other Liquor of a different property, the parts of the first dissolvable begin to alter their position, they either precipitate speedily, or make the Liquor opacous and in time precipitates,
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leaving the water either partly acuated with the additional Liquor, or else insipid, having all the saline parts coagulated one upon another, which being wash't or dulcified, gives you the very same dissolvable Concrete you first took in hand.

10. As for instance, Dissolve Vitriol in water, filter it so as it become a clear solution, upon which pour a *Lixivium* of salt of Tartar, and you shall find immediately the first dissolvable, *viz.* the vitrioline colcotar together with part of both the salts, *i. e.* the acid connate salt of the vitriol and lixivial salt precipitated; after precipitation, the supernatant Liquor contains in it a *neutrum*, or *tertium quid*, from both the foresaid salts, which it will make to appear by filtration and evaporation in the form of a *Tartarum vitriolatum*; the Sediment which was precipitated gives the *Terra vitrioli*, or metalline earth of vitriol; all which happen from a complication of heterogeneous parts in the first dissolvable, *viz.* vitriol, having in it a metalline earth (only to be made apparent, in the form of a metal by force of fire) and an essurine acid salt, which salt, meeting with a lixivial salt, lets go its first dissolvable, and coagulates it self upon the last.

11. But take a single salt, as suppose salt of Tartar, or the fixt salt of any vegetable, dissolve it in water; upon which strong solution, pour distilled Vinegar, Oyl of Vitriol, Spirit of Nitre, or Spirit of Salt, or any of them, or the like acid saline Liquors; and you shall find that after a strong ebullition and boyling which they cause by fretting one upon another, causing a very intense heat, that in the mutual, and as it were hostile action of the salts one upon another, they precipitate each other to the bottom, and leave the supernatant Liquor in a manner insipid: But
to return.

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12. He concludes this last manner of solution in confusion, by an example of the *Spaw* water; five quarts whereof being evaporated over the fire, there will be found in the bottom of the Vessel, an ounce of an ash-coloured blackish Sediment, a considerable part whereof is Nitre, Allom, and Salt, the rest the substance of Iron and Vitriol: This is, according to his last Hypothesis, confusion in good earnest; for here all the Ingredients are confused, and jumbled together: and by what Art the Doctor will learn to separate them, that they may indeed appear to be so many as he speaks of, I know not, I think it would puzzle all his method to extricate them.

13. One Argument more I shall produce against his two Ingredients in the body of Iron and Vitriol, and this shall be *instar omnium*, as being demonstrative, and confirm'd by *Autopsia*; An ingenious Friend of mine, whom I shall not otherwise name, than the Chymical Apothecary of *York*, had a parcel of this ash-coloured Powder, which remained in the bottom of the Vessel after the distillation, or evaporation of the water of this *Spaw*, given him by Dr. WITTIE himself; This he put into a crucible, and gave a very strong calcining fire (as strong as for the calcining of Vitriol into Colcotar) and that for the space of almost three hours, and all this while without the least appearance of any red colour, or the least footstep of either Colcotar or Vitriol, or Crocus of Iron; it became fixt and permanent in the fire, and lost little of its weight; it also became whiter in colour.

14. Now for certain, if there had been any thing of Vitriol or Iron in it, the discovery would have been made, and it forc't to confess its nature, by its yellow, red, or purple colour, with so great force of fire.

15. This fixt Powder having thus inlured the highest degrees of heat, was dissolved, filtred, and evaporated, which when dry, became a most pure white clean Salt; that part of it which would not dissolve, and consequently not pass the filter, being dried, was an almost insipid ash-coloured Powder, somewhat whiter than that which was first taken: Thus we discard these two Pillars of his *Spaw*, viz. Vitriol and Iron, as to the body of them.

S E C T. 6.

1. **A**fter the Doctor hath declar'd these several Wayes, whereby Waters are impregnated with Minerals; and we as closely followed him, to see whether it were so or no: He proceeds to tell us the nature and virtue of these Minerals; first of Vitriol, he saith, it is eminently hot, of a biting and adustive quality, and yet is also stiptick and astringive, and therefore dries up superfluous humidity, &c. according to the account that he receives from *Galen*, *Diascorides*, *Serapio*, *Paulus*, *Oribatius*, *Aelius*, *Actuarius*, *Fernelius* (enough to tire one in the naming) it is a very short abreviary from so great a number of Authors, concerning that Mineral, which well understood, and the Remedies thereof neatly prepared, would make up, as *Paracelsus* saith, a fourth Column of Medicine.

2. But methinks the Doctor's long experience in *re medica* should ere this have furnished him plenty of observations, of the worth and virtue of so noble a Mineral (unless *inopem se copia fecit*) he hath such store that he knows not where to begin; These biting and adustive, stiptick, and astringive qualities of Vitriol, must surely belong to it, either as it is an intire body,

body, of Vitriol, or to the constitutive parts and principles of it.

3. If these his assigned qualities, as he calls them, belong to Vitriol intirely as such, then he must needs mean the common Vitriol; if he mean any other sort, why did not he for distinction sake name it? But what Physician useth to prescribe common Vitriol unprepared for his Patient; being crudely given, a very nauseating and violent emetick to the stomach, and not a proper Medicine for an honest man to use; and I believe the Doctor himself never gave it, unless it was to try an experiment; and if he had given it, I am apt to think it as difficult to have learn'd thence his forced qualities.

4. If these qualities are ascribed to it, as considered resolv'd into its constitutive parts, then he would have done well to have anatomiz'd it, and told us to which parts, such and such virtues and qualities did belong; whether it was to the Salt, to the Oyl, to the Spirit or Phlegm, to the Colcotar, or to any Arcana's singly or jointly, thence prepar'd, and then we should have had some distinct knowledge of what he propounds.

5. It's probable he takes Vitriol to be a simple Mineral Salt, not admitting it to be compounded of those Ingredients, which must necessarily go to its natural *genesis*, and hence depends all his grand mistakes concerning that concrete; but why do I trouble my self or the Reader, in expostulating those properties of which the Doctor is so barren, as what he gives us, is not from himself, but from *Gallen*, *Diascorides*, *Serapio*, &c.

6. Iron is the next, which he saith is dry in the third degree; here we see that as the *Gallenists* have their degrees of the four qualities, by which they feel

and handle as it were the virtues and properties of Vegetables ; so likewise it seems they reach with them to iathom the nature of Metals : I would only Query how they come to know that Iron is dry in the third degree ? Is not Iron as well as other Metals liquid or dry, fluid or permanent, according as they undergo the force of fire in fusion ? which while so in a crucible makes them liquid and fluid like water , by actuating their Mercurial part , which involving the Sulphur of the Metal , makes it flow together with it , as if it were nothing else but *Mercury* , which when cool again , is *in statu quo prius*.

7. But what this third degree of dryness is , of which Iron is found to be , I know not ; I wish the Doctor knew himself , and if he could to certifie these dry notions ; he saith also that it is *stiptick* , drying up the superfluous humidities of the body , somewhat like to Vitriol : This wonted discourse of *Gallenists* ever and anon to these exotick qualities , make no solid satisfactory Solutions of Philosophical Queries.

8. For if a man should ask them , how Iron , even the very body of Iron given in filings sometimes , or any good Preparation of Iron , as for instance , *Saccharum Martis* , viz. Sugar of Steel , become very frequently Medicines proper to Cure (if rightly managed) the Dropsie , Scurvy , *Cachexia* , *defectus Menstruorum* , &c. it's very probable their answer will be , That they do it by their drying quality , by exiccating the superfluous humours of the body ; now these notions of qualities , are mostwhat grounded upon sense ; as for instance , in this very particular , the most superfluous humours in the Dropsie , are , in a *Gallenical* sense , comparable to a mixture , suppose of Water and Meal in order to making of Bread ,

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if the Water out proportion the Meal, it's no way at present to be corrected but by addition of more dry Meal, and that so much as will bring it into a due consistence, so drying up the superfluous moisture.

9. Thus analogically the superfluous humours of hydropick and scorbutick bodies are as we say to be dried up by those Medicines, which having drying qualities be exiccating in such and such degrees, soke up these moist Distempers, and so effect their Cures? which moist notion a few Queries will easily pump dry: As,

10. First, how do these dry qualities act? are not the superfluous humours of these moist Distempers most what in the blood, diluting and making it too waterish? how must therefore these drying qualities reach the corrigible moisture? are they not first to pass the stomach and its ferment, which no doubt must have pretty store of moisture, proper for the absolving its own peculiar functions? and doth the Doctor think these drying qualities will not bait and take a sup in the road? sure enough if they be dry they will: Doth he imagine they can pass the stomach, that *culina humorum*, without acting upon its moisture, unless he grant they act electively, saying to themselves, This is not the moisture the Doctor sent us to dry up, but we must pass into the blood and other humours of the body, to dry up what is superfluous there.

11. But if he say that there are also superfluous moistures in the stomach, which feed those of the blood and other parts, and therefore must also be dried up; which suppose we grant, yet while these drying qualities are acting, drying up the moisture they meet with, what should hinder but they should also dry up the natural innate moisture of the stomach, and

so cause by their stiptick quality a clinging of the Membranes of the *Oesophagus* and *Ventricle*? seeing moisture as such, whether in *equilibrio humorum*, or in exorbitancy, is the proper object for these qualities to work upon, unless he will say they act electively, which would be absurd enough.

12. So that by that time those qualities (if any such there be) had got through the stomach, they would be so tempered with a competent moisture, as that they would lose themselves, and become no qualities, and the expected Cure to be done by them would be left to such as should come after.

13. Again, the Dose of such drying Medicines, how large should they be to imbibe and dry up such great quantities of superfluous humours, as is ordinarily to be found in dropical bodies? surely if they should give Steel in so great a quantity, as to dry up so great a bulk of spurious humidities; when it had done its work, it would certainly reſtagnate in the vessels, and cause greater obstructions then was before.

14. As for *Saccharum Martis*, it is commonly given in a Vehicle, either of Wine or Water, and how this should dry is another Query; for me-thinks it were enough to dash the drying quality of Steel with the very moisture of the Vehicle it is given in; and for this Sugar of Steel thus given in a Vehicle, to exiccate superfluous humidities, is as much as if they should say, a moist body ought to dry up a moist body, which how contradictory, it's enough to name; so likewise those decoctions of *Sarsaparilla*, *China*, and *Guaiacum*, which they so much cant to be drying decoctions, are altogether as irrational as the former; for to call the decoctions of these Diaphoreticks forchamed drying decoctions, implies
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no less than a palpable contradiction; for the operation of these Diaphoreticks, are drying only *à posteriori*, by carrying through the pores of the body, by insensible transpiration or sweat, that superfluous *latex* which cumbers the blood, and not that they actually dry by a positive quality.

15. But that I may give you one sleight hint, concerning the manner of the operation of Iron in the Cures of the formerly named Diseases, and that without taking cognizance of any drying or stiptick qualities; it is thus, First we must presuppose there are several digestive ferments in the body, which if regular and uninterrupted in their functions, are the Authors of transmuting edible food, from one manner of juyce or liquor into another, until it terminate in nutrition, coming for a supply of the continual wasting and transpiring spirits, which so long keeps an oeconomy and harmony of parts, subservient to the health and vivacity of the body.

16. If these digestions by any occasional cause of inordinacy of living, perturbations or passions of the mind, *ex in equale partium robore ab origine nato*, or any other essential or accidental cause of Diseases, become irregular, degenerating from their primitive intentions, perverting their original juyces, thence a spurious acidity becomes exorbitant (although a chiliferous acid ferment is peculiar to that digestion of the stomach) *extra lares suos fertur in alienam mensam reliquarum digestionum*; fluctuates in the vessels, being too much heightened or decocted in the stomach it self, causing Heart-burnings, Pains and Gripings, and sometimes Vomiting, descending into the intestines, causeth the Collick and Illiack Passion; this getting into the veins and arteries, becomes the intrinick Minera of Feavers, & *mortis inopinati*.

17. The

17. The same vitiating the spirituous Liquor of the *genus nervosum*, gives the seminary of Apoplexies, Palsies, Spasmes, and Convulsions; also coagulating it self upon the bowels, causeth obstructions, thence oedematous and scirrhus tumours of the Spleen or Liver, and lays the ground-work for Aposthumations in other parts; the same acting diversly upon different parts vitiates their spermatick elementary Liquor, distends the fibres of the parts beyond their natural tone; perverting their peristaltick motion, whereby the superfluous watry parts, should be percolated from the Blood by Urine, Sweat, and insensible transpiration; which distention (and sometimes flagging of the fibres, having original often from the same) dilutes the Blood, by retaining what should be separated thence, whence come Dropsies.

18. The same spurious acidity or *Sal resolutum*, vitiating severall digestions, defecates the Blood, and floating in divers parts too and again, gives the beginnings to the Scurvy, causeth also obstruction of the *Menses*, and having vitiated the most of the digestions, produce a *Cachexia*, or a totally corrupted and vitiated habit of body, concerning which the noble *Helmont* saith, *Cujus (viz. salis excrementii) sive uterus, hepar, lien, renes pancreas, mesenterium vel stomachus fodina sit, ingentes parere laborantibus molestias*: Which premiz'd,

19. We say that Steel sometimes given in filings, or in the form of *Crocus Martis*, may precipitate and coagulate this *Tartarum resolutum*, or *Sal excrementitium*; I mean this spurious acidity that had fastened it self in the bowels of the Spleen and Liver, altering the tone of the Fibres, diluting the Blood, letting forth the potulent part of the Blood, not by the natural way of Urine, Sweat, and Transpiration, but

but either by an unnatural back-door, thrusting it between the *Peritonium* and *Omentum*, whereby re-stagnating in the *Abdomen*, swells the belly of hydro-pical Persons, or running along the Vessels with the Blood into the habit of the body, amongst the small capillary Veins, which are subservient for the last digestion, viz. Nutrition or Assimilation, re-stagnates there, being carryed in greater Vessels, swells the legs, but being amongst the lesser, cause that sort of Dropsie we call *Ascites*.

20. I say the manner of operation of Steel, whether filings, *Crocus*, or Sugar of Steel, is by coagulating this excrementitious Salt, which because acid, is therefore partly Mineral, for as soon as Steel aforesaid enters the stomach, and so passeth from the first to the second digestion in the intestines, as it passeth along, the spurious Salt runs head-long towards it to dissolve it, but instead thereof is coagulated thereon, spending its activity upon the Steel, loseth its accuteness or sting, and so is carryed away with the Steel by Stool; hence the excrements of those that have taken Chalibeat Medicines are black, and that for no other reason, but that the corrosive fretting Spirits, and spurious acid juyces of the body (those grand authors of pains and torments) are precipitated upon the Chalibeate body, which by coagulation thereon grows black.

21. Hence it is that those corrosive fretting, pontick, and acid juyces, which vellicate and prick the Nerves, in whatsoever part of the body they are found, and twinge the Fibrous parts of the Membranes, throughout the whole body, *utpote patrones dolorum ac torminum*, are I say dinted, softned, and sweetned, by the taking in such fixed bodies of the Metalline compage of Steel, or of animal or vegetable

table Stones, or petrefied concretions, in whose texture is wrapt up a fixt Alkaly, viz. for instance, Crabs Eyes, Coral, and Pearl.

22. All which petrefied animal or vegetable concrete juyces, as also *testacea quævis*, together with the body of Steel, being taken into the humane body, do coagulate the preternatural acid juyces upon themselves, and do so alter the texture of the whole mass of humours, that whereas before by their fretting nature, they caused the stoting to and again through the body, divers Pains, Swellings, Indispositions, &c. they are now become sweet, and circulate in the body in a due proportion, proper for the functions of the several digestions.

23. Even after the same manner as we sensibly perceive, that when they are put into any sort of acid Liquors, as Vineager or the like, though their powders fall to the bottom, yet they give not over working one upon another, until the acid Liquor hath become sweet, viz. insipid, robbing it thereby of its sourness; the like doth almost any Metal dissolv'd in an *Aqua fortis*; which thence separated by distillation or precipitation, becomes mostwhat debilitated; so that it shall not be able to make another the like solution.

24. Hence we may thoroughly resolve that seeming objection, which might stare us in the face, at the very first proposal, of this Hypothesis; viz. that seeing the Metalline body of Steel, or petrefied concretions of Coral, Pearl, and Crabs Eyes, being yet in the stomach, or on their passage through the second digestion, along the intestines, do even these sweeten the acid juyces of the body, whereas they themselves (viz.) the acid juyces may be in more remote parts, and at a great distance;
how

how comes it therefore that these remote corrosive pontick juyces, become dulcified at a distance?

25. Which we answer, first, by observing to you, that if you put the powders of Pearl, Coral, &c. into a glass, upon which pour distilled Vinegar or the like, you may observe that though the powder lie in the bottom, and the Liquor only touch it superficially (and therefore according to the form of the Objection, should only alter and sweeten those very parts only which they touch) yet in a little time we see it sweetens the whole mass of Liquor, and that upon this reason, as I apprehend, viz. because the nature of water consisting in fluidity, is always in motion, so that in a little time all the parts of water, whirl and circle about so long, till they have all touch'd the powder, and all thence received a like dulcification; so in like manner the juyces of the body being liquid, do so circulate about by reason of their fluidity, that in a little time there be few parts of the body, through which the fluid juyces have not circulated, and so consequently meet with those bodies (if any such thing be inwardly taken, as may rob them of their sourish sharpness) which being *extra lares*, prove hostile to the Nerves, Veins, Arteries, &c.

26. Another instance, let Silver be dissolv'd in *Aqua fortis*, there the corrosive *Menstruum* hath totally (though not radically) dissolv'd the body of the Metal, upon which it is also coagulated, although in a liquid form, if into this, somewhat diluted with water, you put plates of Copper, as Refiners sometimes do for the separating of Silver, you will find the Silver desert the *Aqua fortis*, precipitating upon the cuprous plates, and will thereby be totally separated from the *Menstruum*, and that

too, notwithstanding the plates (as they always do) lie constantly in the bottom of the Vessel.

27. You will ask, how comes the upper part of the restagnant *Menstruum* (which hath an equal proportion of Silver in it, as well as the lower part thereof) to be acted upon by the plates at such a distance? to which as before I reply, That the liquid parts of the *Menstruum*, being in a constant motion of fluidity, and carrying the dissolved Metal in it, doth in a little time circulate all the parts of the Vessel, as far as the upper superficies thereof, one place constantly changing places with another, till they have at length all glided along the surface of the plates, which by a peculiar Metallick assimilation, put a stop to its current in the *Menstruum*, and hooks it to it self; which is one of the best and most thorough separations of Silver that is commonly known.

28. The like is done if Copper be dissolv'd in *Aqua fortis*, if plates of Iron be put therein, separating the Copper from the *Menstruum*, and that by the great affinity or likeness of texture of parts of those two Metals.

29. Thus in like manner, when any good preparation of Steel, of Pearl, of Coral, and Crabs Eyes are given, though they themselves pass actually no further than into the first and second digestion, and so proceed, yet being all the juyces and liquors of the body are in a constant fluid motion, and always circulating, therefore of course they must in time touch upon these forenamed fixed concretes, which if they touch they lose their pontick sharpness, by which they become hostile to nature, and have laid the foundation of many Diseases; which thus being dulcified, the juyces do *redire in gratiam*, and circulate as good companions as ever.

30. Steel

30. Steel, our now present subject, operates by separating this corrosive acidity, which had coagulated it self upon the bowels, viz. the Spleen, Liver, Matrix, &c. which spurious sownness meeting with a body to which it claims more affinity, then to the parts it had settled it self upon, joyns with it and becomes coagulated thereon; and so the bowels become set at liberty from their former obstructions, and the circulation of the blood and humours become thereby more florid, the exorbitant latex, which before was extravasated, runs in its own chanel again; and what was superfluous that would not *redire in gratiam*, Nature finds some peculiar manner of exclusion or other, either of Stool, Urine, Sweat, or insensible Transpiration.

31. Thus the Dropsie and Scurvy, *Cachexia*, *defectus Menstruorum*, &c. become Cured; besides which, we might name many more Diseases, which by a skilful managing and ordering of these Medicines, might by the blessing of God be Cured, as the Hypochondriack Melancholly, which chiefly proceeds from a coagulation of this *Tartarum resolutum*, this *Sal excrementitium*, we are now treating of, upon the Spleen, whereby its proper digestion, or peculiar function of seperation of some heterogenous parts from the blood is vitiated, which digestion of the Spleen so promoting the blood in its tincture, and height of spirituosity, wherewith the Spleen enriched with that plenty and complication of Arteries, seems to be destin'd to, being no doubt thereby replete with a noble ferment, which should exalt and spiritualize the blood, by a kind of Chymical separation, of some innate impurities, restagnant in the blood, until it come to partake of the exalting digestive ferment of that part; which to me seems to be

be the very proximate ferment of the blood, before the converting thereof into those nimble spirituous parts; or animal spirits, which flote along the Brain; *cerebel*, *medulla spinalis*, and so in the cavities of the Nerves becomes *Liquor Spermaticus nervorum*, the agent of all operations, attributable to the *genus nervosum*.

32. I say this fermental digestion of the Spleen becomes obstructed and vitiated, by a coagulation of the foresaid spurious acidity, which consequently vitiating its next product, the nimble animal spirits, the very immediate corporeal Organ of the Soul; which spirits, if I may so call them, are the immediate corporeal reflecting glass of the Soul, which it useth for the receiving and contemplating all visible objects; and being vitiated by such an obstructive coagulative Salt, in the Spleen, according to the strength and degree of the obstruent, is the blood perverted in its prolifick off-spring of animal spirits, which become irregular and altogether erroneous, thence making false representations of things to the Soul, whence strange fancyful apprehensions arise; which excrementitious Salt, radicated in the Spleen, hath commonly a *flatus* concomitant, which therefore is called *flatus hypochondraicus*.

33. Not but that this Disease may be inserted in the very seminals of the natural constitution, and (as also some others) become hereditary, in whom the *Idea dementes caduntur in ipso viscere splenis vitiato*, those modeling fancyful impressions, or erring apprehensions, being forg'd from the disturbed œconomy of the Spleen, vitiating those animal spirits which lodge in the Brain or *genus nervosum*, here these extravagant and errattick idea's, feign to themselves strange pains, in a moment make quick and speedy

dy transits, are always upon the wheel of uncertainties.

34. But now at length returning to view the Doctors qualities, methinks they begin to play least in sight, and probably may become *occult*; yea at length be reckoned amongst *non entia*.

35. He tells us what *Dioscordes* will have Iron to do, *viz.* to loose the belly, especially commending the flower or filings of Brass to that purpose, this is like the rest, incongruous; for I believe neither *Dioscordes*, nor himself, ever gave the flower or filing of Brass, if they did, at least never to have had ground-work of observing a solutive property therefrom, for (if I mistake not) should the Doctor give filings of Copper to any Patient of his, he would find that by that time the filings had got into the stomach, and had become fret upon, by the acid ferment thereof, it would presently become desperately emetick, being by that time become as violent a Vomiter, as if so much *viride aris*, or common Vitriol had been taken.

36. Now Iron (saith he) being joyned with Vitriol in this water, partakes of the nature of Brass, and is therefore the more purging and opening, from which conjunction I think it is, that most of our Vitrioline Waters in *England* do loosen the belly; which if it be true that Iron joyned with Vitriol in this water, partakes of the nature of Brass, then must it of necessity, as I said before, prove constantly emetick, which the Doctors long experience witnesseth to the contrary; what difference of operation would it have from so much *viride aris* or common Vitriol, dissolv'd in a large quantity of water? seeing that both of them are made from the body of Copper or Brass, fretted by the acidity of

D

Vineger,

Vineger, or other acid alumenous liquor; so that the water wherein this nature of Brasse is, becoming wrought upon by the acid ferment of the stomach, would certainly become as powerfully emetick, as the other, and then this Spring would lose its good report.

37. We have already sufficiently ravell'd into the nature of both Vitriol and Iron, thoroughly discovering their inconsistency in a Water-spring, which we are loth again to repeat; therefore what we have already said to that point being premiz'd, his *Thesis* of the reason of Purgation of these Vitrioline Waters, will naturally and of its own accord fall; in as much as any sort of Vitriol made out of Copper or Brasse, is, as I said before, dangerously emetick, and not fit for an honest Physician to prescribe.

SECT. 7.

1. **A**llom is another principle, of which, according to *Gallen*, he reckons up three sorts, all of which are of gross parts, and very stiptick, absterfive, heating and something corrosive, &c. as say *Gallen*, *Oribasius*, *Aetius*, *Serapio*, *Fernelius*, &c.

2. Which of these sorts it is, that is the Ingredient of this Water, the Doctor had done well to have put the World out of doubt, for otherwise he leaves us in as great a Mist, nay greater than he found us; for the describing the virtues thereof, he seems to mean no other than that artificial factitious Allom used by Dyers, and Chyrurgeons, which as such is a Mineral compound Salt, which no doubt if the Water have any such Ingredient, must be a simple Mineral Salt, centred in the bowels of the Mineral Stone

Stone of Allom, without any superadditionary ad-
ditaments of Urine, Salt of Kelp, &c.

3. Nitre, another Ingredient, is (he saith) of
two sorts, natural and artificial, the natural tends
to a reddish colour, as saith *Serapio*; *Gallen* saith
there is also a white sort, so that unless *Serapio* or
Gallen tell us the kinds of Nitre, we shall have little
account thereof from Dr. WITTIE, of which white
sort, he saith it is plain that this of ours is, I suppose he
means the white natural sort, and yet goes on without
distinction, describing the virtues of the artificial
sort, saying it is wont to be mixed in Medicines, when
we would attenuate and deterge; it's added (he saith)
to Cerats and Plaisters in Distempers of the Nerves.

4. By all which it should seem indeed by his dis-
course, as if this artificial kind of Nitre used in
Shops, were the Nitrous Ingredient of the Water;
and then we should consult, where those *Salt-peter-*
mongers are, those subterranean nimble sons of *Vul-*
can, who must furnish this Spring, with this artificial
sort of *Salt-peter*; and further query, whether
(if the *Troglodites* knew the use of Sulphur and Dust
of Charcole) they might not (envying Mortals
this happiness) unfortunately (and to the great loss
of the Doctor) blow up this Spring?

5. Salt is the fifth and last Principle or Ingredient
of the *Spaw*, perhaps because it is so neer the Salt
Water of the Sea; and indeed looking a little further,
I find he saith he thinks it receives the Salt from the
Sea, but how demonstrable I know not; for if any
such Marine Salt was in this Spring, it would certainly
upon distillation or evaporation be left in the sedi-
ment, and then would as evidently be demonstrable
by the taste, as we see the Sulphur Well of *Knars-*
brough, having a body of Salt in it, upon evapora-

tion leaves it all behind in the bottom of the vessel; so here a little proportion of Sea Salt, would make the sediment sufficiently brackish, and that distinguishable enough, if it were there.

6. But we find not the least foot-step of any such Salt left after the evaporation or distillation of the water, neither is any separable by any known art of separation of Mineral Salts; for after the sediment of the *Spaw* is further calcined by the force of fire, and another separation is made by solution, filtration, and evaporation, yet is the separated Salt so far remov'd from any such brackish taste, as that it is quite of another perceptible taste, so that the presence of such a Marine Salt is no otherwise than meerly imaginary, and therefore to be taken up by præcarious Philosophers.

7. Thus you see I have run through his five Principles or Ingredients of the *Spaw*, found him tripping at every turn, and very much inconsistent with himself; for notwithstanding the latitude of his assumed Principles, wherein he might have had scope enough to have sported himself *inter thaumata Dei*, amongst the Wonders of God in the Mineral Kingdom, yet we find him ever and anon so, and so narrowly pent up, as if he had not room to turn him, so streight lac'd is the *Aristoletic* and *Gallenical* Philosophy in the whole triplicity of Nature.

Pars Secunda.

SECT. I.

IT is now high-time, after the unhinging of Dr. WITTIES Principles, to come to make a serious scrutiny into the real Principles of this *Spaw*; and though I have made Animadversions upon all his five Ingredients, shewing the inconstancy and inconsistency of them, as he hath laid them down, yet without any intention or thought of denying them all, but to hold to those which we might find demonstrable by experiment.

2. For which intention, I went purposely to *Scarborough*, and took along with me several Liquors and Spirits, by which, I thought, I might best essay the native Ingredients of the water; I took also along with me a solution of the five Ingredients, according to the Doctors supposition, each of them being in several glasses, *viz.* a solution of Nitre, Allom, Vitriol of Copper, Vitriol of Iron, and common Salt, and desired him, for the evincing the truth of his Principles, that he would please to mix these in such a proportion, in a glass of fresh water, as might resemble the taste of the *Spaw* water, and would equally with it answer the same coagulations and solutions.

3. So when we came to the Well, I desired an essay might be made of the mixture of those five solutions in fresh water, to try if we could imitate the *Spaw* thereby; he told the company that I expected from those Minerals which had undergone the fire, to see the same as from those which had not passed the fire; I answer'd, they were naked and bare solutions of

the Mineral Ingredients, made without any stress of fire, and therefore might well be taken to make experiment withall; when he seemingly refus'd it, I called for a porrenger of fresh water, and put some of each of these solutions in, tasting it after each distinct Ingredient was put in.

4. The Vitriol of Iron made it taste very like the sweet *Spaw* at *Knaresbrough*; a little of the solution of Nitre and Salt, did not much alter the taste thereof; to which a solution of Mineral Allom was added, which did not yet bring it any thing near the taste of that *Spaw*, comparing them both together, nor did the addition of Vitriol mend the matter; upon this mixture we poured the solution of Gauls, which presently, upon the account of the solution of Allom and Vitriol, became thick and muddy like ink, and became clear from the same reason, with the addition of some drops of the spirit of Vitriol; not that the solution of Nitre or Salt, contributed any thing to this attrimentous curdling, nor yet was alone from the solution of Vitriol, but also from the solution of Allom, which as to changing colours by the addition of Gauls or solution thereof, doth equally answer the solution of Vitriol.

5. But to come a little closer to the matter, I took a little *Spaw* water in one porrenger, and a little solution of the Calx of Allom in another, upon both of which I poured the solution of Gauls (made in fair water and filtred) and forthwith both waters, viz. the *Spaw* water, and the water of Allom, became coloured alike of a deep purple, and from thence (having a little more of solution of Gauls added) became blackish and opacous almost like Ink; by which I demonstrated to the Doctor, what he would not otherwise believe, had not his eyes convinced him,

him; viz. that a purple colour, and from thence a dark opacity, like Ink, might be made from another liquor than Vitriol or Iron; to which he solely ascribes the changing of colours by a Gaul put thereinto, making that one of his demonstrations, why Iron is an Ingredient in the *Spaw*; which by an ocular testimony I convinced him, that the changing of colour by a Gaul was not any sufficient evidence, that Iron Vitriol must needs be an Ingredient thereof, because the bare solution of the Calx of Allom, having nothing of Iron or Vitriol in it, doth give exactly the same alteration of colour.

6. The strength of his Argument for Iron and Vitriol being plac'd in this, viz. that the sediment which falls to the bottom, upon the alteration with Gauls, which in his book, I take, saith he, to be the Iron Mineral with a little touch of the Vitriol; which certainly had been much more proper, if he had spoke of the Minera of Iron, and left out Vitriol, or of the Vitriol of Iron, and so discoursed only of one, for that both should be there, we have in the first part denied, and held inconsistent; nor is this variation of colour by Gauls a sufficient argument of the presence of the Minera of Iron (though I do not deny it to be an Ingredient) seeing a solution of the calcin'd stone of Ailom will do the same.

7. But to proceed upon both these coloured Liquors, viz. of the *Spaw*, and of the solution of Allom by the solution of Gauls; I poured a little spirit of Vitriol, and presently by degrees, both of them became alike clear again; the spirit of Vitriol working upon, and dissolving all those scattered, loose confus'd atoms, which the Gaul shiver'd the waters into, till they had all become dissolv'd again in the body of water, and became as clear as at first.

8. From whence I inferr'd a further similitude of parts between the *Spaw* water, and the solution of Allom, being alike in their precipitation, and in their reduction, to clear Liquors again.

9. To these clear solutions I poured some drops of *Oleum Tartari per deliquium*, which caused them both to become alike coloured, as deep almost as Ink; for this Oyl of *Tartar* precipitates what ever acid spirits, such as spirit of Vitriol, of Salt, &c. dissolve, and bring clear solutions into confus'd postures; by which it appears, that Mineral Bodies or Salts, may by the force of acid *Menstruums* be resolv'd into clear Liquors, which Bodies are not therefore converted into the nature of the *Menstruum*, and become the same with it, as Dr. Wittie would have Metals that are dissolv'd in *Aqua fortis* to be converted into the nature of the *Aqua fortis*, whereas lixivial Salts evince the contrary; for either a fixt or volatile Alkali, will presently precipitate, and make it fall to the bottom; whatever acid corrosive Liquors have dissolv'd, by which the Metal he thought lost, would once more become the object of his Opticks.

10. Then upon these Muddy Inky Liquors, I poured some more spirit of Vitriol, and clear'd them both again, upon which clear Liquors, I poured some volatile spirit of Harts-horn, which, as the Oyl of *Tartar*, made them both become confus'd and Inky.

11. By all which it appeared that the solution of calcin'd stone of Allom, admitted the same precipitations and resolutions with that of the *Spaw*, by acid Liquors and alkalizate Salts.

12. Then we poured forth these Liquors, and took fresh *Spaw* water, and fresh solution of Allom, upon both I poured some Oyl of *Tartar per deliqui-*

um, which caused a whitish curdling separation much-
what alike in both, which would again become clear
by the addition of some drops of the spirit of Vitriol.

13. Now the Query is, how comes Oyl of *Tar-*
tar or any lixivial Salt, or volatile spirit, to cause this
separation of parts in all Mineral or Metalline solu-
tions that are made by acid Menstruums? Whether
they do it by coagulating themselves upon the bodies
of Minerals and Metals, or by uniting with the
Salts of the Menstruums, and so thrusting forth
the other bodies of Minerals or Metals?

14. For the solving of which doubt, we must first
know that there are three sorts of Salts or Spirits,
out of which ordinarily Menstruums are made for
the dissolving of most bodies commonly dissolvable;
commonly dissolvable I said, because the Liquor Al-
kahest of *Paracelsus* and *Helmont*, that *primum ens*
salium, their grand Solvent, doth, as *Helmont* saith,
dissolve all sorts of concretes whatever into their pri-
mitive juyces. These Salts or Spirits out of which
common Menstruums are made, are either acid, and
those either naturally so, as the Essurine acidity which
is to be found in Allom, and Vitriol Stones, also in
the sower juyces of Herbs and Fruits, amongst which
that from Grains or Wines, is most eminent; or
are so made from Mineral Salts by force of fire, as
spirit of Vitriol, spirit of Nitre, Salt, &c.

15. Or secondly, from Alkalizate Salt, and those
either fixed (as Salt of Tartar, Wormwood,
Broom, or any other vegetable fixed Salt) or vola-
tile, as spirit of Urine, Blood, Harts-horn, or
the like volatile spirit from any vegetable, as Sage,
Wormwood, and the like; the Alkalizate Salts are
used to dissolve in water for the extraction of Brasil,
Sena, &c. and the volatile spirits mixed with a vi-
nous

nous spirit; helps to procure a stronger solution and tincture of Mirrh, Aloes and Saffron, than spirit of Wine alone would for the making *Elixir Proprietatis*.

16. Or lastly, Menstruums are made from vitrous spirits, which is the frequent Menstruum for extracting the subtil sulphurous Medicinal parts of many vegetables, though I have seen and made a fourth sort of Salt in order to a Menstruum, which was an artificial one, made by the fire, which indeed is a kind of result from the three former Salts or Menstruums, and being dissolv'd in water or spirit of Wine, makes no ebullition, with either alkali-
zate solutions or acid spirits.

17. Now whatever it is that one of the two first dissolves, the other being added precipitates; if any solution or extraction be made with alkali-
zate Salts or volatile Spirits, upon the mixing a little acid spirits of Vitriol, Allom, Nitre, or the like, a precipitation is presently made of the dissolv'd body; as for instance, in the preparation of the Magistery of Chochineel or other vegetables, as the primary Ingredient for the confection of *Alkermes*; which is made by a decoction of the Berries in water, acuated with Oyl of Tartar; when by this means by iterated affusions of more of the same Menstruum all the tincture is got, upon which filtered pour the solution of crude Allom, which is alone as if so much spirit of Vitriol answerable was poured on, and what the lixivial Salts had dissolv'd, the acid precipitates; which being washt both from the taste of Oyl of Tartar and Allom, is the Magistery of *Kermes*.

18. Where take notice that the ingenious *Zuelser* saith, That in the preparation of this *Lacca Flo-
rentina*,

ventina, as he calls it, he hath got almost double the quantity thereof in respect of the Berries he first took in hand; that which made up the bulk was an addition from the Menstruum, and precipitating Salts.

19. So likewise in the solution of Minerals or Metals, as for instance in a filtered solution of Vitriol made in fair water, into which if Oyl of Tartar be dropped, there is presently, as I said before, a separation and precipitation of the Metalline parts of Copper or Iron, according as the Vitriol was made, and with the Colcotarine parts, there doth also fall some of the very salts both of the Menstruum, viz. acid salts (for whose sake it is the Metalline parts appear under a form of a Liquor) and also of the alkalizate salts, in as much as to make the Colcorar appear, single and solitary, there is need of a dulcification by warm water, which being filtered and evaporated, gives a sediment or neutral salt of the same nature with that which is left after the evaporation of the Liquor out of which the Metalline parts were separated, viz. a *Tarsarum Vitriolatum*.

20. By which it is evident, that when a Mineral body is dissolv'd by an Essurine acid salt, acuating a quantity of water wherein the solution is made, fretting upon, and subillizing all the otherwise grosser parts of a Mineral in *minima*, grinding them as I may say into the minutest particles, that then if some of the contrary sort of salt, viz. fixt or volatile alkalies be poured on, the salts immediately close with one another; but being of different textures of parts (and thence apt to make different sorts of Menstruums) and so of a contrary nature one to another, fret themselves into other shapes, in which fretting

fretting they cause an heat, and sensible or insensible ebullition, according to the intenseness or remissness of these hostile salts, in the Duel they thrust forth the already dissolved Mineral or Metalline body, which, loosening the salts that dissolv'd them, fall headlong to the bottom, whilst the salts have turn'd themselves into a *neutrum quid*, and part are fallen together with the precipitated body.

21. So that the salt of Tartar immediately reacheth the acid salts of the Menstruum that hath dissolv'd any Mineral body, and thereby precipitates and lets fall to the bottom the dissolv'd body, and part of it with some of the acid salts are carryed along with them, which appears because the water wherein the Mineral precipitate body is dulcified upon evaporation, gives, as I said before, the same things as is made from the combining of the two salts in the superfluous water, viz. a *Tartarum Vitriolatum*.

22. Hence it is that Oyl of Tartar being drop'd into the *Span* water makes a whitish coagulum or separation, because of the solution of the Minera of Iron, which is dissolv'd in the Effusive acidity, either as it passeth through Allom stones or other proper matrixes in the bowels of the Earth, wherever its found, as to its simple primitive elemental acidity, it's all one, and therefore by some called the *primum ens* of all natural Minerals, solutions, *Span* waters and salts.

23. For this Mineral acidity is the very solvent in the water, which pervading a Minera of Iron, makes a slight solution of it, and being equally contempered together, makes up the body of the *Span*, upon which if spirit of Vitriol or any other acid Liquor be poured, it makes no alteration in the water, because of similitude of parts between the

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the acid spirit of Vitriol, and the acid solvent in the water, no more than fair water mixed with fair water, or spirit of wine mixed with spirit of wine; but fixt and volatile alkalies, being of a contrary temper, precipitate whatever Mineral solutions the other hath made; for an ingenious Friend of mine took a good quantity of the *Spaw* water, upon which he poured some lixivium of Tartar, which caused a great curdling separation of a white matter; by standing a while, a white sediment fell to the bottom, which when the water was poured off, and the rest dried to a powder, became a white and almost insipid calx; by which it was evident that both the salts, *viz.* the acid salt of the *Spaw*, and the lixivial salt became dissolv'd together in the restagnant water, and only let the aluminous calx, which the acidity of the water had before dissolv'd into it self, fall to the bottom, and that without the least perception either of Vitriol Iron or any other Ingredient.

SECT. 2.

1. **T**HUS far I assented to Dr. WITTIE, *viz.* that an alluminous salt, from a Mineral acidity had dissolved a slight touch of the Minera of Iron, and both dissolv'd in the current spring of water makes up the *Spaw*; I asked him how he would demonstrate his other three Principles? and first as to Vitriol, he said, that in the carriage of the water from the spring to remote places, there was found to be a loss of spirits, which he called Vitrioline spirits; first, that these were Vitrioline spirits, and that they were lost, remained to be proved; that there was an alteration in the water by carrying to distant places I granted, but that I told him I apprehended

hended was from a quassation of parts, which in wooden vessels might easily admit of an incipient putrefaction, whence might really proceed an inversion of parts, which would beget a great alteration in the texture of the water, not to say what alteration may be made from oken vessels, which by precipitation may make a great alteration.

2. But an ingenious person being by, asked the Doctor; whether suppose the water was sealed up in a glass bottle hermetically, and so carryed to a remote place, whether it would be altered by carriage or no? he answered, he thought it would; if so, then it was not from any volatility of parts, because the glass was supposed sealed up, therefore the alteration of the water, was not from the loss of any volatile spirits, and consequently not from the loss of the Vitrioline: But the foresaid ingenious person, put some of the *Span* water into a glass bottle, and stopp'd it up from the air; into an other glass bottle he also put of the same water, but let it stand open; the first he observ'd that though it was kept until the water suffered a little putrefaction, did yet give a tincture to Gauls, he tryed another bottle after the very same manner, which yet did not give the tincture as the other did; but the bottle that stood open to the air, within two or three days lost its tincturing property, so that though we should grant there are volatile parts which take wing in the air, yet are they not Vitriol, because though kept in closely stop't vessels, yet in time they lose themselves, which if a body of Vitriol was there, would be permanent; it is therefore an *aporrhœa mineralis*, whether Vitrioline or Alluminous.

3. But being he mentions this loss of Vitrioline spirits, which by agitation of the water (in carrying

it at distance) evaporates, I wonder seeing those are so considerable according to his own supposal, making the water act more lively, why, I say, in his experimenting the water he did not set upon the distilling of it, and saving, by accurately closed joints, those Vitrioline spirits, that he might have tasted them, or by other means have brought them upon the test and examined their nature, but he very civilly, because they are volatile, lets them go.

4. If you view the Doctors tools, by which he undertakes to hew out the rudiments of this *Spaw*, they are indeed very rude, and of a low rank, viz. a skellet, a culinary fire, but not a word of a glass Still, which an ingenious Artist supposing volatile spirits, would rather have chosen for the satisfaction of himself and the World, he tells us almost a wonder, viz. that when the water was almost evaporated and spent, it riseth up in billows making a bubbling noise, like the boiling of Allom in the Mines at *Whuby*, which he might see very frequently in the evaporations of most Mineral, Metalline, nay vegetable solutions, but that it may be it is the first he hath seen, and therefore excusable.

5. I arguing with him against Vitriol, as being inconsistent with that of Iron in the *Spaw*, told him that I apprehended, that if there were any common Vitriol in it, would be emetick or vomitive; that it had no such operation, constant experience convinc'd, as also an example he produc'd of a man that every morning drank Eighteen Quarts, for two weeks together without any vomiting at all.

6. But the reason he blusht not to urge, why, though Vitriol be in the water, yet it should not vomit, you will wonder at, it is this, viz. we frequently give in our Cordials, saith he, spirit of Vitriol

Vitriol as also to quench thirst, but doth not at all make the Patient vomit, saith the Doctor.

7. As if, according to his account, the spirits of Vitriol were nothing else but Vitriol it self, and then indeed it would hold good what he saith, that when the Vitrioline spirits were gone, the Vitriol it self would also take wing; to which we return'd, that the spirits were but one part or element of Vitriol, and the *caput mortuum* or Coltotar another, and that the chief vomitive property, lay not singly and distinctly in either of these, for if the Colcotar should cause vomit, yet it is because there remains still some salts or spirits unseparated, which when thoroughly dulcified, hath nothing near, if at all, that emetick property it had when the salts were joynd to it.

8. Copper amongst all the Metals, if resolv'd into a *Viridaeris* or Vitriol by any acid salt is the most, if not the only emetick Metal (excepting Mercury, which although *mater metallorum*, yet is reckoned one of the seven, which by *Aqua fortis* or Oyl of Vitriol, is brought in to precipitate or turbith Mineral, either of which is desperately emetick) I say Copper or the Minera of Copper being resolv'd by an acidity becomes emetick, these salts being separated either by distillation, or otherwise by a Menstruum, the Metal or Minera becomes what it was again.

9. Now the Query is, whence the vomitive quality of this cuprous solution should proceed? It is not surely singly from the Sulphur of that Metal, because it being separated from that Metal by the Liquor Alkahest, becomes, as *Helmont* saith, a sweet, fixt, anodynous Sulphur, and therefore quite contrary to an emetick property; nor is it alone from the Mercurial

Mercurial part, because then the same would be had from *Saturn*, *Jupiter*, *Luna*, &c. inasmuch as they have as great a proportion, if not a greater of *Mercury*, than *Venus*. Now the *Saccharum Saturni*, nor the *Sal Jovis*, as far as I understand, hath any thing near such; if at all, Emetick qualities; and as for the *Sal Luna*, or Salt of Silver, that is chiefly purgative, witness the *Pillule Lunares*.

10. It is therefore from the Salts preying both upon the mercurial and sulphureous parts jointly considered, which together make up so hostile a texture of parts, as that they become wholly inimical to nature, becoming totally refractory to the acid ferment of the stomach, which not admitting so tyrannical an Enemy, gathers all its Forces together, rallies them, and opposeth with all its might this grand Antagonist.

11. But reduce again this Vitriol into its primitive Elements, viz. *Sal acidum*, & *terra Mineralis sive Colcotar veneris*; or reduce *viride eris* into the acid Salt, and cuprous body; and none of these singly and alone shall be Emetick; for the Spirit of Vinegar, nor soure Juyce of Grapes, nor the Spirit of Verdigreese, is at all vomitive; nor yet is the Salt of Vitriol of *Venus*, if totally by an artificial *Menstruum* it be separated, Emetick; nor is the Spirit of the same Vitriol at all vomitive. So that it's very clear, that the hostile property of vomiting, is jointly from the commixtion of the *Menstruum*, that dissolves either the Minera of Copper, whence the *Vitriolum cupri*; or of that acidity that coagulates upon the very body of Copper, for making of it *viride eris*.

SECT. 3.

1. **I** Queried with the Doctor how he came to understand that Nitre was an Ingredient, and that the chief in the *Spaw* water, being as he writes the most predominant; his arguments for it were twofold, the first argument he urged was this, which as he thought was grounded upon experiment: Take, saith he, the *Spaw* water, into which put some Gauls, which strikes a colour, then after it hath stood awhile, give the vessel a shake, and somewhat like a blackish sediment will fall to the bottom, then pour off the clear water, and set it upon the fire, and in a little time there will be a separation of a whitish curdling matter; take it off the fire, and let it stand to cool, and there will be found another whiter precipitation than before, and pour off the clear water again, and this precipitate, saith he, tastes somewhat like to Nitre; the clear remaining water being boyled up to a dryness give the rest of the Minerals.

2. To which I replied, that after the first precipitation was made, by the addition of Gauls, the the clearly decanted water receiving an alteration from the fire, begun to make a spontaneous separation of part of the contents thereof, which I had no other cause, from any argument of his, to look upon otherwise than of the very same nature with the sediment which remained after the boyling up the rest of the water, as to the taste of it, which he thought was somewhat Nitrous, I suppose might be spoke in favour of what he would willingly it should have tasted.

3. Many solutions may upon the fire give a separation of parts, which are yet but of the same nature

nature, with those left after the evaporation or distillation of the Liquor, so that this whitish separation severs no distinct Ingredient from the *Span* water, neither doth it evince any truth in favour of the multiplicity of principles in that water.

4. His other argument, which indeed is the chief he insists upon, is twofold, *viz.* first from the Nitre, which is frequently found upon the Cliff, at the bottom whereof the Springs break out, this he thinks must needs (because so near the Well) contribute its assistance to the water, and that which confirms him in his judgement, as he imagines, is that when the Rain comes it washed off this Nitre, and after that more sweats thorough the earth, as he supposeth, and fills the vacancy of the former.

5. To which we answer, that it is true there is Nitre found along the Cliff near the Well; but that this Nitre should contribute any influence to the water, I deny; by shewing, first, that that Nitre is ingendred chiefly from the air, and next to that, that it is only superficially to be found.

6. First, that it is chiefly begotten from the air, is apparent because it is to be found very plentifully on old Walls, either Brick or Free stone, upon the Lime in the seams of the Walls, especially where the Rain comes not, but the air hath free access, for otherwise the Rain washeth it off when it comes; this is called *Nitrum murarium* or *Nitrum aerium*, being a volatile aerial Salt coagulated upon Lime, Allom, Stone, or the Mineral Earth of Allom.

7. To the coagulation of which Salt, is required a competent body or subject, which may answer the indication of a *Magnet*, upon which these Nitrous particles, floating in the air, settle themselves; of which sort are the forenamed bodies, *viz.* Lime,

Allom, Stone, Mineral Earth of the same, as also any fixed salt, penetrating the body of an earthen Pot, as likewise an Essurine Colcotar, made barren of its imbred spirits by force of fire, all which centre upon themselves, the volatile Nitrous Atoms dispersed in the air.

8. So that this Nitre lyeth not in veins of the earth as a Mineral salt, as Dr. Wittie supposeth, but is meerly superficial, and therefore washed away by every dath of Rain; for if a solution were made of the same Mineral earth where this is found, it is very probable we should upon examination find nothing of Nitre in it.

9. The other part of his argument, which he thinks is *iustar omnium*, to confirm his opinion of Nitre the chief Ingredient, is this experiment, viz. that upon the exposing of the Minerals (as he calls the sediment left after evaporation of the water) some while in a moist and cold air, that there have been found *stiries* or little Ickles among them, which is the form of Nitre; as to the veracity of the experiment we are not incredulous, but that this should evince the preexistence of Nitre in that sediment, is the thing we contend and very much question.

10. For we say that the alluminous body left behind, after evaporation of the water, is of the same nature with the Mineral earth or stone of Allom found upon the Cliff, and so the one as well as the other becomes equally magnetical, and attract or centre upon themselves the floating Nitrous particles dispersed abroad in the air; so that it is not the moist air that extraverts any preexistent nitrous parts from the body of the minerals; but the volatile nitrous salt fluctuating in the air, settles it self upon proper magnetical bodies, among which, the sediment

ment of the *Spaw* water (being chiefly an Alluminous Salt) is most peculiar.

SECT. 4.

1. **B**Ut that we may the better illustrate the truth of what we assert, *viz.* That an acid alumenith mineral Salt, preying upon, and dissolving a slight touch of the Minera of Iron, gives essence to this *Spaw*, consider this following Experiment. Take a duskyish yellow Earth, which lyeth much in veins, as also interspersedly here and there upon the Cliff near the Well, which is discernable enough in taste, being sweet and stiptick, like Vitriol, or Allom, or both.

2. This I dissolv'd in simple distill'd Water, and filtred, with which mixing a little powder of Gauls, gave an alteration of colour towards a purple, though not speedily, which with Spirit of Vitriol became clear again, after the manner of the *Spaw* water.

3. The same clear Solution of this Minera found upon the Bank under which the *Spaw* runs, being mixed with Oyl of Tartar, gives a white *Coagulum* of milky separation, like the water of the *Spaw* it self, or the solution of Allom; which, with addition of Spirit of Vitriol, or *aqua fortis*, becomes clear, and with Oyl of Tartar becomes white, which may be again restored to its pristine Clarity, by adding Spirit of Vitriol, or *aqua fortis*, &c.

4. The same Solution having some drops of Spirit of Harts-horn mixed therewith, gives a white separation, and with Spirit of Salt becomes clear again, answerable in every particular to the *Spaw* water it self.

5. Some of this clear Solution I distill'd in a Glass retort, until what remained was a bright styriate flo-

scule, increasing the fire somewhat more, it came to be a dry white Salt, of a stiptick allumenous taste.

6. The water which was distill'd off from this Salt, being saved in a glass Receiver, whose joints was close stopped, would not give any alteration of colour, either with solution of Gauls, or with lixivium of Tartar; which argued that no heterogeneous volatile parts of the same nature with the Salts, came over the helm.

7. All which put together, evince no less than a parity or likeness of Principles between that Mineral earth, and the *Spaw* water; for from a parity of Principles in an homogeneal process, results a likeness of products, so that the *Spaw* is nothing else but this Essurine acid Salt in its Mineral earth (*in toto suo Metallico*) being an allumenish terrestrial Globe, dissolv'd in the current Spring of water.

8. For the specifical difference of all Mineral Salts, depend upon these three, *viz.* a Sulphurious, acid, essurine spirit; water, and a Mineral Glebe; from the various solutions and mixtures of which, arise the variety of Mineral Salts, in the bowels of the earth.

9. Water impregnate with this acid sulphurious spirit, diffus'd thorough the occult Meanders of the terraqueous Globe, according to the nature of the Mineral Glebe it meets withal, it becomes coagulated into such and such a salt; for if this acidulated water, find a falguginous Glebe, it becomes coagulated, according to the property of that Glebe, together with its connate salt in a *sal marine*, which with greater dashes of water passing thorough the subterranean channels, becomes dissolv'd and carryed into the Ocean, thence the saltiness of the Sea, which hath its Minera from fossile salt, from which also
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some Springs are fatturate, as the Sulphur Well at *Knarsbrough*, &c.

10. If the sulphurious acidulate water meet with Nitrous Veins, it coagulates into Nitre, which being by other current streams of water dissolv'd, very probably become the original of intensely cold springs, viz. such as *Magnus* Well, *Cockroft* Well, &c. which though to touch extremely cold, yet by an intrinsic sulphurious warming property, doth so notably open the pores of such as are bathed therein, as that it resolves the congealed blood and latex, settled about the joints and outward parts of the body, thence becoming the cause of Pains, Aches, Stiffness, Numbness and Lameness of the joints, which by the penetrating opening virtue of those Nitrous springs are resolv'd, and thence a redintegration of the glyssent ferments of the blood and humours, which give warmth and motion to all the parts again.

11. If the aforesaid effurine water find a Mineral Iron bed, it becomes determin'd thereby, either into a Vitriol, or becomes the original of most acid *Spaws*, called *Fontes aciduli*, sharp springs, such as *Tunbridge*, *Epsom*, *Knarsbrough*, &c. amongst which this of *Scarbrough* is not the least.

12. The sweet *Spaw* of *Knarsbrough*, is but languid of Mineral principles, having but a very slight touch of the Minera of Iron, and hath the effurine acidity but in a very remiss degree, thence it is that great quantities must be gulped down, before any sensible operation by purgation.

13. As the Minera of Iron terminates the sulphurious acidity into vitrioline sharp springs, so in like manner the Minera or *primum ens* of Copper, coagulates this effurine salt into a cuprous Vitriol, and that either fassile to be digged out of Mines, or i

further dissolv'd in a water spring, which by exhaling the moisture by the Sun, or by boyling it up over a fire, it shoots into Vitriol. Or lastly, this acidity is coagulated in Mineral cuprous stones, which being expos'd to the air, become resolv'd by the falling of Rain water thereon, which after filtration and boyling up, shoot in great troughs into common Vitriol.

14. But if this essurine sulphurious water find an allumenish Glebe or Rock, it becomes thereby coagulated into natural Allom, receiving a specifical difference, from that particular Mineral Glebe, whereby it becomes different from the other coagulations of the same Mineral acidity, which by further dissolution in the current of a water spring, give being to this of *Scarbrongh*, and other the like *Spaws*.

SECT. 5.

1. **N**OW whence the great variety of Mineral glebes should proceed, is a Philosophical query, worthy our most choice consideration; especially seeing that from the multiplicity hereof, the sulphurious acid spirit, becomes determin'd to this or that particular specifical salt of *sal marine*, Nitre, Vitriol and Allom.

2. For in these the Metals are *in solutis principis*, in their primitive juyces; their Mercuries, though volatile, crude, and undigested, yet are spermatical and as such are the radical moisture of Metals, not to say the Mercury of Philosophers, these are apt to be coagulated and maturated into Metals, by the embryonate Sulphurs, which lurk *in intimis Thalamis glebarum metallicarum*, which according to the purity

purity or impurity of the terrestrial Matrix, and degrees of the graduation of the Sulphurs, are determined and specificated in imperfect and perfect Metals to the completing the septenary of the Metallick order, besides their middle Minerals, which are in the Road to Metalization.

3. That all Metals and Minerals have their innate seeds, shut up in themselves, we shall not need to spend time to confirm, *in auro semina sunt auri quamvis abstrusa recedunt longius*; seeing that their spermatick principles, become prolifick *suo more*; whose seed operating in a volatile crude Mercury, and an embryonate Sulphur, become deducible after the manner of a natural genesis unto their state of maturation, accord to the process of their concretes in the Vegetable kingdom.

4. We may therefore consider, that as God, the original Founder of all beings, hath implanted in the superficies of the earth, that great variety of vegetable seeds, whence the diversity of Plants, not only sprung up at first, but by their seminal beginnings, or somewhat analogous thereto, have continued to propagate themselves in their species.

5. Every Vegetable at its proper season by the instigation of the heavenly influences, having its seminals set at work, in which it hath its own specifick faber, or (if I may so call it) Archeus, which by its innate plastick power, begins to hew forth it self a body, out of the elementary principle of water, shaping it self in stalk, branches, leaves, flowers, seeds and fruits, according to the platform laid in the feminal beginnings thereof, every Plant in its kind, to the great and wonderful variety, which we see upon the face of the earth, so that *presenssem refert, qualibet herba Denm.*

6. So

6. So in like manner the invisible Divine Power, hath according to his own *beneplacit*, dispersed variety of Mineral and Metaline seeds in hidden places of the opake body of the earth, whence indeed the great and manifold difference of Mineral Glebes or Earths, which Mineral seeds, as well as all others, whether vegetable or animal, are indemonstrable *a priori*, taking at first their immediate beginings from the very bosom of the Eternal Being.

7. And therefore only demonstrable to us *a posteriori*, viz. to our common sense, by appearing in a visible garb upon the Stage of the World. Now these dispersed Mineral Seminaries, wherewith several parcels of earth become impregnate, being set at work by the primitive *fiat*, which is the same to this day as ever, in their beginning to shape bodies for their ideal essences to become manifest in, form to themselves a Mercurial volatile juyce, and an embrionate Sulphur, as the *materia proxima & prima* to Metalization.

8. With these two proximate principles, the Mineral Archeal faber operates, ripens the elemental crudities, and in a linear process puts on a tincture and weight, and at length terminates in the coagulation of a perfect Metal, specificated according to the form of the innate seed; for the ripening coagulating fire of the embrionate Sulphur, is as the *Sol terra* (*id quod est inferius, est sicut quod est superius*) which kills the *Python*, viz. exiccates and maturates the radical Mercurial moisture, and terminates it in a Metallick species: But I digress, this being more fit for a Philosophick discourse upon another subject.

9. We say therefore that these Mineral Glebes, have for the mostpart a Mercury and a Sulphur in
solutis

solutis principiis, and both dissolvable in an essurine salt for salts are the keys that unlock the Mineral Kingdom.

These are those Menstrual Salts which teach Minerals and Metals how to dissolve in water, by breaking them in *minima*, and thereby how to communicate their medicinal virtues for the health of mans body.

10. Here the Chymistry of nature is most admirable, which by its own peculiar Menstruums extracts the essential innate virtues of Mineral Glebes, and that by an intrinlick invisible fire in the digesting vessels of the earth, yea and by the help of Art, supplying the difficulties of Nature, by frequent solutions and coagulations, may yet further graduate these mineral virtues into more noble Arcana's, whose essential tinctures may the better penetrate the vital ferments of the Microcosm.

11. But how this Sulphurous essurine Salt, becomes determined and specificated, according to the difference of the Mineral Glebes it meets with, into this or that fossile Salt or Mineral mixture, may perhaps not unaptly be represented, by this following instance; as suppose several colours and salts placed at a distance, one from another upon a large Marble, and common simple water is convey'd to each of these, this water though the same to all, yet as it comes to every of them, it becomes differently tinted and tasted, according to the colour and taste of those parcels it meets with.

12. So this essurine Sulphurous Spirit, meeting with variety of Mineral Earths, though the same in it self to every one, yet becomes altered and tintured according to the different property of the Mineral Earth, and that according to the degree of Sulphur, maturing the crude Mercurial juyce.

Now to confirm this our Thesis, we must assume these

these two considerations, first, that all the various specified Mineral Salts, as Allom, Vitriol, Nitre, &c. have *aliquid commune*, something in common amongst themselves; and secondly, that thereby all these Salts become transmutable one into another.

13. For the first, that they have something in common among themselves, besides confirmation by our previous discourse, is yet further demonstrable by matter of fact upon our second consideration, *viz.* the transmutability of one salt into another, by the Chymical Art we can out of *sal marine* or the spirit thereof make a Vitriol of Iron or Copper, and by dissolving Quicksilver in Oyl of Vitriol, according to what is done in making turbith Mineral; as suppose four Ounces of Oyl of Vitriol to one of Mercury, after the phlegm is evaporated and distilled, that there remains a white precipitate, whichedulcorated by washing gives a Citrine powder, and being revived (as by distilling it from pot-ashes it may) gives the same weight of current Quicksilver as it was at first: This water which is impregnate with the Vitrioline Salts, by being boyled up gives a true Allom; here Vitriol salts are transmuted into an allumenish salt, and that without the addition of any thing but Quicksilver, which is again totally separable, and yet salts by the very odour of the Mercury is turn'd into an Allom.

14. And not only Oyl of Vitriol with Mercury, but also Oyl of Vitriol with common *sal marine* gives Alumen; for if you put Oyl of Vitriol, as we sometimes have done upon common salt, and distil it in a glass body or retort, with a gentle heat, you will find a very volatile spirit of salt will come over the helm, which will fume exceedingly, the *caput mort'*, or remaining salt being dissolved, gives a salt exactly resembling Allom.

15. Also

15. Also Allom in its Minera exposed to the air, is as a Magnet to Nitre, attracting and centring it upon it self, and common salt is in the body of Nitre. Thus you see a relation or circulation of salts one into another; and all this, because they have in their Centre that one common Essurine spirit of salt, which according to various alterations in Mineral beds admits of different coagulations.

16. In short, by way of recapitulation, it is thus, the Essurine acid salt, having in its solution got a slight touch of a Vein or Minera of Iron, and passing through a Rocky Mineral Glebe of Allom (of which along the shore of *Scarborough* and *Whitby* is found great plenty) becomes more specificated in an allumenous than any other salt, with which the water of the Quick-spring (which breaks forth at the foot of the Rock) is impregnate, which makes that Fountain, viz. the *Spaw*, we discourse of.

SECT 7.

1. **H**AVING thus run through the essential principles of this spring, which make up this body of Mineral water, which is so frequently (and that for the most part, not without the expected success) drunk for the health of mens bodies, I think it not impertinent to speak somewhat of its virtues, and that the rather because Dr. *Wittie* gave forth, as I was inform'd, that I endeavoured to defame the *Spaw*, in that I held it to be an allumenous Spring.

2. Let him therefore and the World know, that in the Essurine salt of Allom, as noble medicinal virtues are to be found, as in any other Mineral specificated salt whatever, for this salt in its *primitive*

ens is volatile, and therefore exquisitely penetrative; forcing its passage, thorough the otherwise obstructed Meanders of the bowels, notably opening the obstructions of the parts, and thereby restoring the blood, and other peculiar spirituous juyces of the *genius nervosum*, to their primitive fermental vigor.

3. For the better understanding of which, we are to consider, first, the natural fermental digestions of the body; next to that the depravations thereof, by excrementitious parts; and thirdly the Diseases thence depending; and lastly, the restoration of these digestions, by removing the interrupting obstacles and redintegration of the blood and humours.

4. First by the digestive ferments of the body, I mean such alterative juyces as are *ab origine* implanted in such various principal parts, as are adapted for the transmuting of the nutritive juyce of all aliment, from one consistence, colour, and taste, into another, untill it hath run the whole circuit of alterations, giving a proportionable nourishment to every part, for growth of children in the way to maturity, and for the supplying the deficiencies contracted, by constant transpiration in adult persons.

5. These ferments are (as the ingenious *Helmont* saith) *transmutationum parentes & à priori indemonstrabiles*, the authors of all transmutations, and cannot be demonstrated by any thing before them, because they are primitively inserted *ab ortu*, and so become radical principles.

6. That of the stomach is certainly such a one as is scarcely to be parallel'd in *rerum natura*, excepting the prodigious effects *Helmont* tells us of the grand Liquor Alkahest, which makes every concrete *fatiscere in suam primam materiam*, resolving them into their primitive juyces. This acid ferment of the

the stomach is so powerful, as no other extraneous acidity in the World, can (if in its native vigor) resolve the hardest of aliments into a milky juyce, and transmute several sorts of food, as Beef, Mutton, Veal, &c. taken at the same time into one similar *cremor*, which no other acidity (we yet know of) can do, though assisted by as equal a digestive heat, as we can imagine to be in the stomach or the parts adjacent.

7. I shall not enter upon a large discourse of the Ferments, being notably and fully discuss'd, both by the noble *Helmont*, and the ingenious Dr. *Willis*; I shall only assume so much of that Doctrine as to illustrate what I intend, *viz.* that these vital ferments being strong and vigorous make such alterations, separations, depurations, exaltations and assimilations of the nutritive juyce, as are convenient for health and the common functions of life.

8. But if they become alienated and depraved, by excrementitious parts, accumulated through the inormities of living, as by excess of meats or drinks, which burden by out-proportioning the digestions, as also by food which agrees not with the ferment of the stomach, as also by unseasonable exercises, and by passions of the mind; all which together with the inclemency of the air, &c. have such an influence upon this and other parts of the body, as that by perverting the ferment, or precipitating the fermented mass, doth so alter the function thereof, as that thereby no small foundation is laid for the multiplicity of Diseases, both acute and chronical; but especially chronical, whose deep roots are most what inserted in the feminals of the depraved ferment of the stomach.

9. The Diseases thence proceeding, are generally the

the Scurvy, Dropsie, Asthma, Vertigo, Nauseatings, Vomiting, Diarchea's, and sometimes Dysenteries, &c. all which, though when in their full state of symptomes and products, indicate a vitiating of other ferments of the body, and appear in other parts, yet have their beginings from the perversions of the stomachical ferment.

10. For no sooner is the ferment of the stomach vitiated, by the foresaid or any other occasional cause, but the nutritive juyce receives such different alterations (according to the degree of the error of the ferment) from what it should be, as that either the crudeness or over acidness of the chile whilst yet in the stomach, lays the begining of the seminaries of the foresaid Diseases, which being transmitted thus raw, or too pontick into the other digestions, draw them likewise into consent, and so vitiate one digestion after another, until the Diseases appear in their full dimension and latitude of symptomes.

11. Now if the ferments become debilitated by the accumulation of excremental impurities, which in persons of weak constitutions in tract of time, more easily happen, than the alimantal juyce proves not well dissolved and digested, which passing the first digestion thus crude, either before its transit through the *pilorus*, causeth a *flatus*, then a Nauseating Vomiting or Pain of the Stomach, a Vertigo, or lays the foundation of a Feaver, either continual or intermitting; if it pass the *pilorus*, it vitiates the second digestion in the intestines, and thence Worms, Jaundice, Obstructions of the Misentery, &c.

12. If this vitiated juyce pass thus uncorrected from the thoracical vessels, into the *vena cava*, and so into the heart, which I suppose to be the third digestion, taking the second and third of *Helmont's* digestions

digestions to be but one, which is done in the intestines and lacteal vessels: The third, to begin with sanguification, viz. when the chyle hath passed the second digestion in the intestines, and there receives a further depuration and separation into a more refined milky juyce, whose receptacle are the *glandules* of the Mesentery, and the *Lumbaxes* is further carryed by the thoracical vessels into the jugular veins, and there meeting with the blood, is dashed with a rubicund colour, and carryed into the ventricles of the heart, and there undergoes the third ferment, where it is elaborated into vital blood. I say if the foresaid vitiated juyce, come thus raw into this third digestion it terminates in Fevers both continual and intermitten.

13. For the (otherwise) nutritive juyce, coming so indigested to the vital ferment of the heart, which is not able to master it, or make any good arterial blood, subverts the vital digestion thereof, rouseth up a spurious febrile fermentation, and intestine commotion of the blood; hence the burning heat in Fevers, and coming from an impure digestion in the stomach, whose footsteps it yet retains, thence the great thirst, and from the same, yet further vitiating the other digestions of the *genus nervosum* (which is the Minera of animal Spirits) proceeds Frenzies, Deliriums, &c. and therefore according to the degrees of this vitiated juyce, and consequently of the intense or remiss disturbance of this vital ferment it causeth the paroxysmes of intermitting Fevers, to come sooner and later; thence the variety of Quotidian, Tertian, double Tertian, Quartan Agues, &c.

14. If this depraved juyce arrive at the *succus nervosus*, ubi *spiritus animales* educuntur, which I

take to be the fourth digestion, or depuration of nutritive juyce, in its road to absolving the function of sense and motion; thence a perturbation of those animal Spirits, an inversion of their natural *crasis*, whence Lethargies, Epilepsies, Apoplexies, Convulsions, Spasms, &c. all which depend upon the depravation of the spermatick juyce of the *genus nervosum*.

15. But if it reach to, or be depraved, by the fifth or last digestion, *viz.* the assimilative ferment of the solid parts of the body: thence Abscessus, Apophthumations, Fistula's, Ulcers, Tumors, Prurigoes, &c. all which depend upon the vitiating of the ultimate digestion in the habit of the body.

16. I look upon the alimential juyce in its way to nutrition, to undergoe many alterations from specificall ferments, placed in different parts of the body; to suffer many separations, and to pass through many Colanders or Streiners, where it is percolated and depurated, each ferment after other (while a symmetrie in the œconomy of parts) enricheth it with new and more balsamick tinctures, enlivens it with more elaborate spirituous particles, adapted for the clarity of sensual functions, as a more depurate diaphanous vehicle for the soul to act in.

17. I say these Spirits (which are almost the ultimate result of all the digestions) have their constitution and daily supply, from the succulent parts of the aliment, which passeth various fermentations, and are at last fabricated out of the purest parts thereof; according therefore as the vigour of these ferments are, and the depurations of the nutritive juyce more or less: so are these Spirits in their *Crasis* more pure and serene, or dull and opaque, whence the soul which sees and acts by these organical Spirits, either becomes lightsome and cheerful in the outward fancy and

and portals of the external senses; thence the sanguine and colerick complexion. Or becomes dark, dull, and heavy, and as it were incarcerated in the dungeons of the senses and sensual fancy, the cloudiness of those Spirits darkens the soul, and makes up the melancholy complexion, which with a little variation makes the phlegmatick.

18. I look upon the Spleen and the ferment thereof, to contribute very much to the Crasis of these Spirits; for if the ferment thereof be deprav'd, so as a due separation of the blood is not made (which yet ought to be) and that which should be separated is yet retained: thence obstructions in the very parenchym of that bowell, a darkning and cloudiness of the Spirits, a melancholy vaporious steam soyls the channels of the animal Spirits, and obscures the function of those nimble agents, inverts their order, breaks their ranks, and brings a sad catastrophe upon the animal powers.

19. The soul while in the body hath these airy Spirits for its Vehicle, having thereby an influence upon all and every part, is not determin'd to any particular place, neither in the *glandula pinealis* of the brain according to *De Cartes*, nor yet in the membranous tunics of the stomach, according to *Helmont*; though I do not deny but in the one it may have its peculiar residing place for the regulating the culinary digestions, and in the other its turret to take in the sensible impressions from outward objects, to look about it through the casements of the senses, yet is essentially in every part: and where ever it finds any hostile enemy, which impugne the texture of those Spirits, there the sensitive soul (by which I mean the vital and animal Spirits, which yet are but one; and that the Vehicle of the immortal

Soul) acts *ad nutum*, rallies up all its forces; in- counters the Disease, and at length, *si vires ferent*, plucks out the morbid thorn, and all is well again.

20. So that all the digestions and ferments, the separations and depurations thereunto belonging, are but to prepare and so elaborate the nutritive juyce, as thence a continual supply may come in for the preservation of these animal Spirits, the Vehicle of the soul; whose different Crases make different complexions; and whose different alterations, by various depravations of intermediate ferments, cause no small offspring of Diseases.

21. Now as the crudity of the alimental juyce, first made so, for want of a due fermentation in the stomach, and passing on uncorrected from one digestion to another, lays the foundation (as I said) of several Diseases: so in like manner the over acidness or spurious ponticity of the stomachical ferment (which is also a depravation of the ferment thereof) gives begining to several other Diseases.

22. For though the genuine ferment of the stomach, be specifically acid; and as such, doth so temper, dissolve and equally mix the meat and drink we take, as to bring it to a chyliferous cremor, and that as a necessary preparation to the succeeding digestions: yet if it become too exorbitant, even while in the stomach working up to the upper mouth thereof, causeth Cardialgia's, Heart-burnings, and sower belchings. That a spurious acidity is the cause thereof, appears by their Cure, which is done by such things as have power to correct, by diluting and sweetning such superfluous acidities, *viz.* by any fixed salt of Vegetables, or any concretes which contain a fixt Alkali in them, as Crabs Eyes, Corals, Pearl, &c.

23. This spurious acidity transmitted into other digestions

digestions, cause other Diseases; *extra suos lares*, saith *Helmont*, *in alienam messem transmissa, evadit hostile venis & arteris*, &c. for if it be sent into the second digestion, it causeth sometimes the Colick, Gripings, Iliack Passion, with Spasms, and Convulsive motions of the Guts: and sometimes from an acid *flatus* or sowerish *gas*, fretting upon the spermatick parts of the intestines, causeth Gripings, Dysenteries, which grating upon the tender tunics thereof, liquates the blood from them, and the adjacent parts; at every tormenting liquation puts nature upon the rack, makes the tender parts confess their weakness to so powerful a fretting agent.

24. Where by the way take notice, that in a complete digestion of the stomach, where there is no more than a proportionable acidity, the cremor comes somewhat acidulate to the second digestion, which by the ferment of those parts, is transmuted into another taste, *viz.* as *Helmont* saith, it becomes of a saline taste, I say though it come somewhat acidulate, yet is conquerable by the ferment of the next digestion, so that unless the acidity be beyond the natural proportion, it causeth no alteration as to the foresaid Diseases.

25. If this exorbitant acidity be carried to the third digestion in the heart, it becomes hostile to the arteries, subverts the Crasis of the blood, by altering the sweet balsamick soft natural temper thereof, impressing an austere sower property: sometimes causeth Fevers, but most what lays the foundation of a depraved scorbutick ferment, by perverting the sweet temperature of the blood, inclining it to a sour saltishness, which precipitating the balsamick parts, and giving fluidity to the saltish and sulphureous parts of the blood, in the same sowerish property,

property, hinders the natural fermentation of the blood, and in lieu thereof begets this scorbutick ferment.

26. This perversion of the genuine ferment of the blood, proves a remora to its circulation, making it at sometimes to restagnate, in some of the arterial or venal chanel in some parts of the body: where coagulating, causeth Tumours, Imposthumations, inward Ulcers, Pains, becomes a thorn in those parts, which pricketh (if I may so say) the Archeus, incenseth the Spirits, inflames the parts, brings on a Fever, which, if mortal, hurries all out of doors.

27. The scorbutick ferment prevailing, by degrees spreads it self, by vitiating one digestion after another, until it appear clad in all its colours, branched forth in all its symptomes and products, which are various, sometimes in one drefs, sometimes in another, viz. in errattick Pains, Dulness and Heaviness of Spirits, Tumors, Ulcers of many sorts, Spots, Looseness of the Teeth, Soreness of the Gooms, Foulness of the skin by Botches, Roughness and other impurities of the outward parts.

For the blood is so corrupted by the vitiating ferment of the Scurvy, as that it constantly breaths forth, staining Apporrhea's or impure steams, which making their egress through the pores of the skin, are, by obstructions they find there, coagulated upon the outward parts, and so make Spots, Botches, Foulness, Roughness (as if nettled) and other impurities of the skin.

I cannot otherwise, at least not better, compare the skin of mans body, in these and such like foul Diseases, than to a transparent glass; which if the steams, rising from a spurious fermentation of the blood

blood and humours, become too gross to be pervious to the pores thereof, then they condense along the sides, begetting Spots, Stains, foul Damps, &c. analogical to the dampy mists of the Scurvy, which if it were possible to cover the body over with transparent, white glass, we might easily discover the impure mists and dark steams, arising from the bastardly fermentation of the blood, in Scurvies, venereal Diseases, malignant Fevers, Plague, &c. which if the interception of the circulation of the air (that necessary bellows of Life) would not prevent the successfulness of the experiment of glass-Receivers, we might discern very strange and unthought-of Apporrhæas, cloudy mists, impure steams, circulate within the atmosphere of the aforesaid diseased bodies, perhaps not much unlike those foggy mists, cloudy vapours, and tempestuous confusions, which frequently happen within the Orb of the Earths atmosphere, which gives that frequent change of weather in the Macrocosm, as these cause alterations in the Microcosm.

These vaporous steams arising from the blood of persons infected with the foresaid Diseases, are not simple distillations, or meer evaporations of the blood; for then neither our glass-Receivers, or our skins would condense or percolate any other than fair simple water, which would cause neither Spots nor Stains: but the steams of spurious fermenting blood is quite otherwise; for here nature endeavours an analysis of the morbid matter, in the resolution whereof, it carries off *vapore tenuis*, the very seminal Miasmes, equivalent (according to their proportion) to the reliëts thereof, struggling in the channels of the blood; for we see in all fermentations a separation of some *terrene faces* to the sides of the vessels,

vessels, also of an incoercible *flatus*, which carries along with it some slight touches of the radical principles in the fermenting Liquor.

Whence first we see the reason of the infectiousness of the foretold Diseases; for in such spurious fermentations nature attempts a resolution and separation of the peccant matter, which takes wing by those impure vaporious steams; in its road it leaves its character of Spots, Stains, Blotches, Buboës, Ulcers, &c. in the outward parts of the skin, and so goes on to the utmost extent of the activity of its own Orb, which if (as I said) could be retained by glass-Receivers, we should not only see the extent of its Orb, but also view the corrupting soiling Ap-porrhea's, which issue from such infected bodies, now what bodies come within the orb of their activity, if duly fitted for the reception of those Miasmes, they become tainted with effluvia's thereof, which retain the platform of the very seminal principles of the Disease in the body, or at least carry along with them somewhat analogical to those very Diseases they spring from, even so much as to be sufficient to propagate the like Disease in the next infected body, as we see most frequently in malignant Fevers; especially the Plague.

Whence also we see the reason why some precious stones, worn in Rings or otherwise, *per modum appensorum*, will suffer a loss in their oriental splendor and brightness, when near such bodies as have these soiling steams arise from their fermental impurities, viz. in such bodies as have the Small Pox, malignant Fevers, Plague, yea sometimes in such as have the *French* Disease and Scurvy in an high degree, whence the Saphir or the Hyacinth, being so held to a pained Member in suspicion of the Plague,

as that it reflects the light upon the affected part; doth so collect and concentre those malignant steams which arise from the infected blood, as that in a very small time (if the party be really infected) it makes the part grow wan and black, and becomes the infallible indication of the Plague, by which afterward, as *Helmont* saith, the virulency as through a tube or chimney is driven forth; that a piece of red Coral should grow pale upon the touching of an hysterical (or I rather think menstrual) woman is from the same cause, for upon the regurgitation of the menstrues there happens an extraordinary defecation of the blood, which by a kind of virulent fermentation, sets the blood into a venomous steaming, which oftentimes is so powerful, as it not only soils the external parts, but also passeth forth, and meeting with any transparent or reflecting glass, or Gem stains them, which is not so much from the breath of a menstruous woman, as from other steams which pass through the pores of the body round, but especially at the portals of the eyes.

In like manner appears the reason of the *Evestrum vita, bene vel male affecta*; for amongst precious stones, some are diaphanous, others opaque, as Coral, Cornelian, Turcois, Jaspis, &c. but in pellucids, as *Helmont* saith, that *Evestrum vita* reverberates it self; for as he saith, *gaudet vita speculo lucido reflecti*, and therefore he looks upon Gems as opaque well polished glasses.

And seeing as he further saith, that something doth constantly and necessarily breath through the pores of our bodies, which participates with life it self, and acts within the sphere of its orb; and this in the most sound bodies, which if it find a polite body, reflects it self therein in the manner of a glass;

glass; and hence it is that many periaпта become effectual, by being such polite bodies, wherein the *uestrum vita* reflects it self in *modum speculi*; and from this very root ariseth most of the *arcana sympathetica*; yea and from this original by figmental additions came the *Ganiaben* and *Talismanica* of the *Arabians*, from whom *Paracelsus* was taught that sort of Magical Doctrine, viz. his *Archidoxie Magica*, &c.

28. This *Dyscrasia sanguinis* is not only compatible to the Scurvy, but also to other chronick Diseases, as the Quartan Ague and the Dropsie, in both which, the peculiar natural ferment of the blood is much vitiated; in the first of which, the blood losing its native balsamick sweetness, becomes acid and pontick, even in an high measure; thence the great difficulty of its redintegration to its former eucrasia: in the latter, the blood becomes too much diluted, drowning its rubicund balsamick tincture, in a watery deluge, having the latex regurgitated in too great a proportion into the vessels of the blood or other receptacles, from an obstruction in the veins, which should (if well disposed) separate from the blood an urinous latex, and by other more abbreviate passages betwixt the stomach and it, a great deal of the potulent parts taken in: but being obstructed makes both regurgitate, the one into the vessels of the blood, thereby vitiating its ferment by too great a dilution, which in the habit of the body causeth an *Anasarcolis*, and the other in the cavities of the *abdomen*, between the *omentum* and *peritoneum* swelling the belly causeth the *Hydrops*, which with a *flatus* extending the membranous parts, begets a *Tympany*.

29. But if this spurious acidity reach the fourth digestion,

digestion, where the animal spirits are fabricated, and there afflict the *genus nervosum*, it causeth, by vitiating the ferment, scorbutick Palsies, Apoplexies, Spasms, Convulsions, and Cephalalgia's, which prove inveterate, and sometimes Epilepsies; yet commonly this hostile acidity as solitary is not sufficient to beget these scorbutick Apoplexies, Palsies and Epilepsies: but also hath *quid cadaverosum spirituale*, and therefore *virosum*; some spirituous putrid and therefore poysonous matter to accompany it. By which I mean such a portion of the nutritious juyce as not having received due fermentations in the severall digestions, but become more and more vitiated and putrid, and being circulated from one digestion to another, grows more putrid and penetrative, and in continuance of time becomes so spirituous, as to be able to insinuate into the more retired recesses of the vital principles; for being by these rotations volatiz'd, hath more easie ingress into the inward retirements of the vital and animal functions; so that it becomes gradually exalted to a kind of virulency, which joyning issue with this transmitted spurious acidity, *insidiantur vite*, sits upon the skirts of life, betrays it into the hands of these truculent Diseases. Hence it is that the Palsie or Apoplexie prove suddainly mortal, if not at the first, yet commonly at the second or third paroxysm, and from the same basis ariseth the causes of other kinds of suddain deaths; for when this depraved, circulated matter, hath reached so far, and be wheeled so often, as to acquire a virulency or cadaverousness, it then takes an occasion by the next exorbitancy of the digestions, joyns hands with it, and conspires the extinction of the vital flame.

30. This fourth digestion, as I conceive, begins
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in the arteries and is complete in the nerves, for when the alimentary juyce, being dash'd with blood in the *VENA CAVA*, receives a vital ferment in the heart, and becomes elaborate in the tunicles thereof, into a rubicund balsamick liquor, which by the perspiration of the lungs, in the bloods passage thorough the *VENA arteriosa*, and *arteria venosa*, receives a volatizing ferment from the air, conducing much to its circulation, is thence by the *Isystole* of the left ventricle carry'd into the *aorta* and other arteries: where the blood begins to be further elaborated for the producing of spirits, which may be subservient for the animal functions of sense and motion; where from the continual elixation of the blood in these vessels, it begins to sublime, or distil into more pure refined spirits, which pass directly into their proper Receivers or Conduits, the Nerves, to complete their digestion and absolve their function of sense and motion, for as much as every Arterie hath a vein and a nerve annexed to it, the one to carry away these volatile spirits, the other to bring back the blood, after it hath been exhausted of these spirits, and spent its other balsamick parts, in nutrition in the habit of the body, to recive a fresh impregnation, by the vital ferment in the heart again, in its return out of the solid parts, by capillary veins into larger vessels, untill it come to the *VENA CAVA*, it meets with fresh nutritive juyce, coming from the jugular and thoracical vessels which thence pass along together into the heart to become freshly replenisht with the vital balsam.

31. So that these animal spirits are made in every part of the body, while the arterial blood is fraught with a vital ferment, out of which the Archeus by a further volatization hews forth these spirits: here the

the hermetical adage is most true; *id quod inferius, est sicut id quod superius, & vice versa*: for the vital agents, if not interrupted, are alwaies and in every part at work, *nunquam feriatur natura*; therefore sensation and motion are alwaies and in every part, except some interrupting cause break the links of this noble chain.

32. Now any disturbance in this digestion, such as by a conflux of the foresaid spurious hostile acidity, cadaverous virulency, &c. may confound and so blunder the texture of these spirits, as thence all the various exorbitances and different anomalous products, with all the heteroclite symptomes of the *genuus nervosum* are reducible, which I shall not now take the time further to illustrate. But pass on;

33. This exotick acidity coagulating the blood in the Matrix in women, is the author of most of their uterine infirmities; for in women who are not with child or give not suck, if all be well with them, the blood attempts to make a lunar evacuation, which it doth by separating a portion thereof at the critical season, into the vessels of the Womb, which according to the intent of nature, is for the nourishing of the *Fœtus* after conception, being a precursory provision for that end: if no conception be, as in Maids, Widows, &c. then nature endeavours to separate, and carry away that superfluous blood by vessels fitted for that purpose, where it receives a fetid menstrual virulent ferment, which gives the uncleanness (not to say more) to that evacuation.

34. Now when the superfluous blood, is proscribed into the remote vessels ready to be expel'd, is there robb'd of the vital balsam, its *Crasis* perverted, and becomes infected with an acid virulent alumenish tincture, *Nam linæum menstruo tinctum, ut Helmon-*
tius

tius loquitur, si demergatur in aquam bullientem, maculam contrahit in posterum indelibilem, quæ tertis saltem elotione, excidit è linteo foraminato, non secus ac si spiritu sulphuris acido aut tincturâ aluminosâ corrosam foret; which depraved virulent acidity is not transmitted from other digestions, but is innate and connatural to the place, like the stercorary ferment to the *cacum* and *rectum* of the Guts.

35. If this virulent aerimony, with which the separated menstrual blood is vitiated, becomes by a retrograde motion revulsed into the veins or arteries where the vivid balsamick blood circulates, which is done sometimes by unseasonable cold contracted at the crisis of evacuation, or by too much blood spent in venesection, or by symptomatical enragements of that furibund animal the Matrix, or by what other cause soever, is I say the effectful cause of direful Diseases, proper to that soft sex; viz. Syncop's, Palpitations, Convulsions; and horrible strangulations.

36. For this exotick revuls'd virulency assaulting the blood and vital spirits therein, begins to ferment strongly, smites the heart, or at least those balsamick spirits which received vitality from the heart; thence immediately Swoonings, whereby for a time happens a suspension of the vital offices, the pulse ceaseth or is weak, the spirits flag, the circulation of the blood is torpid, and all the vital powers shaken: sometimes it strikes the heart with a palpitation or trembling, viz. the vital spirits stand amazed, as if smitten with a thunder-clap from the uterine toxicum; also it afflicts with Convulsions, making the animal spirits run counter, whirling them in oblique gyres to the contortion of the musculous parts.

37. And further by an influential manner, it cau-
seth

seth terrible strangulations, by suddainly stopping the pores of the Lungs; and that too, though the Lungs be never so sound (whence all suspicion of any corrupt matter being there to cause the obstructions, is taken away) as also the same is evident in that, after the cessation of the strangulating paroxysm, many times no invisible evacuation follows: and this it doth I say by contracting the pores of the Lungs, whereby all respiration is intercepted, and consequently no pulse, nor circulation of blood during that time; sometimes this acrimonious virulency hath access to the hypochonders, and there (especially when it is acuated and grows more virulent by circulation) it causeth Frenzies and Madness, which sort Mania's prove difficult to cure, because they are not generally right understood, what is the true effective or efficient cause.

38. Thus in short, of the cause of these terrifying Diseases of the female sex. Now there are other more common (but less if at all virulent) Diseases, which happen frequently to women from the redundancy of blood, which not having been brought so far as to be proscribed into the vessels where usually it receives the foresaid menstrual virulency, but is, because superfluous, ready to be transported into the common *clonca*; yet by obstructions in the Matrix is sent back into the mass of blood, where it stuffs the vessels, restagnates in some parts, causeth swellings, and coming too plentifully to the Heart, so as not being sufficiently volatiliz'd by the respiration of air, stuffs the Lungs, causing, short-windedness, heaviness of spirits, which in young women causeth the Green-Sickness; in others indigestion of stomach, Pains, Gripings, Head-aches and other various symptomes: all which are curable by removing the foresaid cause
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of obstructions, by aperient Medicines together with the breathing of a vein, which in these Diseases of an inferior order, from the bare obstructions and recursions of blood, as blood, is not impertinent but of use, which in the other case of the revulsion of the virulent menstrual ferment into the blood is dangerous; but especially at that time when the critical evacuation happens; for then it becomes one of the chief causes of the retrogradation thereof into the blood, and of all the symptomes issuing thereupon.

39. Lastly if an exotick acidity be transmitted from the other previous digestions into the fifth or last, or become actually ingendred and fostered therein, then it becomes the cause of many Diseases found in those parts, for in the ultimate digestion all assimilation of the nutritive juyce is made, so that every part according to the innate ferment thereof turns the one similar aliment into its own likeness; whence then utrition of all though different parts from one and the same nourishment.

40. But if this ferment of any part become alienated from an inbred or transmitted acidity or sowerish saltness, it forthwith depraves the nourishment thereof, and causeth Aposthumations, Fistula's, Ulcers, Tumors, the Evil, Tetters, Inflammations, &c. and sometimes rouseth up the paroxysms of the Gout, or Sciatica; for we see that in Fistula's, Ulcers, or any other running Sores, if the Patient prove exorbitant in his Diet, either in eating saltish meats, or drinking too much strong drink, or to petulant in venereal exercises, is easily discernable by the flux of the wound, which argues that the alimentary juyce, made from the food taken in, retains some footsteps of its primitive nature, which it carries through all

all the digestions, and therewith vitiate the very last, and according to the degree of the depravation of the ferment, and rawness of the nutritive juyce, the different sorts of Ulcers, &c. proceed.

41 That the paroxysm of the Gout may be roused up from the exorbitancy of a spurious acid ferment in the ultimate digestion, is not uneasie to apprehend, if we consider how some sorts of *French Wines*, *Goose*, salt Meats, &c. easily excite a fit of the Gout, to those who are inclinable thereto, which they do either by retaining a specificall ferment, through all the digestions untill they come to the *synovia* of the Joynts, and there display their hostileness to the parts by proritating the Gout; or rather they vitiate the alimentary Juyce, provoke a spurious ferment in the Stomack, incense the Archeus, at whose beck all the digestions and ferments are subservient; who presently impresseth a fermental acidity upon tender *synovia* of the joynts, thence the Gout, and all its attendants begin to keep court.

42. Now the Gout is a feminal or Ideal Disease inserted into the very initials of life, and therefore hereditary, which can lie long rooted in the very vital principles, ere it make it's first assault, and between one fit and another, is as really present in its morbid character, as when cloathed with all its symptoms, only wants an acid ferment and a beck of the Archeus, to transmit it into the proper Matrix, which it no sooner hath, but is *podagra omnibus numeris absoluta*, a complete Gout.

43. But an objection meets me, which is this, *viz.* That seeing this spurious acidity in the alimentary juyce, as it passeth along from one digestion to another, becomes the material cause of so many Diseases, how comes it, that the Diseases it causeth are not ter-

minated in the first, second, or third digestion: seeing that in those places by its action on the ferments, and their reaction upon it, oftentimes it loseth its acrimony, and assumes some other property, which it carries into the subsequent digestions: and consequently if it be carryed into the last digestion to make Diseases there, it must first in its passage through the primary digestions, cause Diseases belonging to those parts, whereas experience evinceth the contrary?

44. To which I return, first by saying That all acidities, in subsequent digestions of the chyliferous juyce, are not always transmitted from that spurious one of the stomach: but sometimes are new products hatcht in the very latter digestions, by the occasional and spontaneal depravations of their ferments; and therefore must only cause Diseases where they are found. Next, That these transmitted acidities are sometimes in other digestions transmuted into other properties, no less hurtful than before; as for instance, may be turn'd in the third digestion in the blood to a spurious saltishness or styprickness, &c. as prejudicial to the balsam of the blood as the other would have been.

45. And lastly, I answer by saying, That spurious acidities may be transferr'd at distances, *ad numerum Archei*, at the beck of the Archeus, which is the overseer of all the Engine-works of the digestions; as for instance, In those erratick pains of the Gout, how suddainly will the Archeus (in whose *aura vitalis* the morbid character of that Disease, is intimately imprest) transmit an acid ferment from one part to another, from the left foot to the right shoulder or arm, in a small moment of time: yea from one foot to the contrary knee, and to the contrary foot in a little time: all which is done by an Archeal

Archeal transmission of an acrimonious ferment, skipping by an influential manner the intermediate parts, and hitting upon this or the others Juncture, sets the humours of those parts a working, which fretting the tender membranes and *periostium*; like a Mole sometimes works under-ground, and otherwhiles throws up its little hills, viz. Tumors, Tophous knots and coagulations.

SECT. 8.

1. **N**OW some may say, What's all this to the virtue of the *Spaw* water? The answering to which *quare*, will give me liberty to prosecute what I aim at, viz. The restoration of the digestions, and redintegration of the blood and humours, by removing the interrupting obstacles, and how far the virtue of the *spaw* may reach in the cure of the fore-said Diseases. For having in the former *Section* given a short account of the essences, and original causes of many if not most Diseases, what they are, and whence they proceed; how they arise from a vitia-ting of the several ferments, either causing a rawness or over-acidness, or other hostile properties in the nutritive juyce, having distinguished them into the several classes of the digestions,

2. I shall therefore now signify what Diseases this *Spaw* is proper for what not, *Helmont* tells us, *Pota Spadaxa non multum conferunt in epidemicis, endemicis, & astralibus morbis, ut sunt pestis, pleuritis, prunella, &c. nec quibus venenum subest vel assumptum vel intus genitum vel contagio participatum, ut neque in morbis tinctura, quales sunt lepra, lues Veneris, Morphea, Cancer, Epilepsia, &c. viz.* that the *Spaw* water avails nothing in pestilential Diseases, Plurisies, Pru-

nella's, Poysons taken in or inbred, neither in the Leprosie, *French* Disease, Morpew, Cancer, Falling Sicknes, nor in the Apoplexie, Palsie, or Asthma.

3. And though in womens Diseases upon occasion of obstructions of the Menstrual evacuations, there may happen Epileptick, Paralytick, Apoplectick, and Asthmatick affections, which by frequent drinking of the *Spaw*, the obstructions being thereby remov'd, the foresaid dreadful Diseases may cease; yet doth it not thence follow that they as such Diseases considered, as from their own natural causes, or as they are found in the male Sex, are therefore curable by drinking the *Spaw* water: so that great distinction must be made between those Diseases flowing from their natural feminaries in the body, and those which proceed from the regimen of the Matrix, which *Proterus* like, puts on the same vizard of such Diseases, as if sprung from their proper inbred causes in the male kind.

4. So that to the curing of the Epilepsie, Apoplexie, Palsie and Asthma, the solitary drinking of the *Spaw* (though accompanied with all the rules imaginable) is not sufficient, unless assisted by the efficacy of some noble specificks, which yet without the *Spaws* might do their work, though it's not amiss to absterse the *sordes* of the primary culinary digestion by the *Spaw*, which may thereby somewhat contribute to the energy of specificks, whose work is to dint and mortifie that malignant blasse, which arising from the virulent circulated recrement, suddenly surprizeth, stupifieth, and taketh the animal spirits.

5. For in the Epilepsie, the circulated cadaverous excrement, coming to its maturity brings on a fit
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of that Disease, by impugning the *aura vitalis* of the Archeus. From the antipathetical concurrence of which two, ariseth a secret incoercible *flatus*, which being pent up by obstructions in the ultimate digestion, imites (*quasi ictu oculi*) the animal spirits, which ceasing to act, the body falls down; or if they act, it's after a retrograde and irregular manner, causing Convulsions, and Distortions; of the musculous parts; but the *flatus* being after a while dispers'd, the spirits return to their former offices. Which happens otherwise in apoplectick and paralytick Diseases; for though there be the same concurring causes; to these as to that of the Epilepsie and a *flatus*, which at the second or third fit proves mortal, by secretly stifling the spirits; yet the *flatus* inclines to one side of the body, striking in with the *perolei* (if I may so call them) or influential chanel of the Microcosm, settles the anodynous, cadaverous recreation in the organs of Sense and Motion: and there lodgeth along time, to the great disinablement of the animal spirits; hence the tediousness sometimes of apoplectick and paralytick paroxysms.

6. The incoercible *flatus* which accompanies these Diseases, is no better demonstrable, than by putting one ounce of *sal-armaniack* into four ounces of *Aqua-fortis*, stop the glass up close, and in half an hour or less you will be convinced of the power of an incoercible glass; for you will see the glass, and that with a great noise, broken into many shivers: which happens from the antipathy of those two, working one upon the other, exciting thereby a strong *flatus*, which being pent up by the sealing or stopping of the glass, forceth its passage by breaking the glass, though never so strong.

7. So in the body of man, the incoercible *flatus*

arising from the mutual contact of the circulated cadaverous recrement, and the *aura vitalis*; though it splits not the body; yet it either quite extinguiſheth the vital taper, or at leaſt flattens and diſinableth the animal ſpirits.

8. Now the remedy muſt either be equivalent to the cauſe or it effects nothing. But the *Spaw* water comes ſhort, and reacheth not to thoſe inward recesses where the animal ſpirits lie on their death-bed, and therefore can adminiſter no help; eſpecially if the Diſeaſe be graduated to the maturity of one or two paroxyſms. For though by abſterſing the primary digeſtions, it may help to prevent the plenteous ingendring of the excrements in the after-digeſtions; and ſo conſequently if timely taken might prevent the occaſional cauſe thereof: yet if the Diſeaſe have once become raiſed from its ſeminaries to a full ſtature; then nothing but ſpecificks will doe: ſuch I mean as hath power not only of correcting and preventing the enormous *flatuſ*, but alſo of abſterſing the ſubtle cadaverous *ſordes*, repoſed in the inward chanelſ of the animal ſpirits, by inclining them to a tranſpiration: ſweetning alſo the concomitant ſpurious acidities, which is particularly done by ſome noble vitriolin Arcana's: The *Elixir Proprietatis*, and volatile tincture of Coral of *Paracelſus* and *Helmont*, *per ſpiritum ſanguinis*, *per lac perlarum* & *per appenſa*, &c.

9. The ſame circulated cadaverous recrement, ſometimes ſettles upon the ſpongy *parenchyme* of the Lungs, at which *borret Archeus*, & *flatuſ ſuffocativum* extimulat; which ſuddainly obſtructs the poroſities thereof, and cauſeth an *Aſthma*: which often intercepting the air, hinders the ventilation of the vital fire in the Heart; if prevalent, ſuddainly puts out lifes taper.

10. This

10. This is not curable by the *Spaw*, being too languid in its virtue to reach the Lungs; especially when it is come on to the ripeness of an Asthma: is curable by the former specifics, and that because an Asthma, Epilepsie, Apoplexie and Palsie, are identical in their material and efficient causes, viz. The same circulated, anodynous, cadaverous recrement, settling in different places cause the foresaid Diseases; in the brain, the Epilepsie; in the membranous and nervous parts, the Apoplexie and Palsie. If it only vitiate the organs of motion *salvo sensu*, then it's the Palsie; but if both motion and sense be deprav'd, and that with a vibration upon one side, or through the whole body, then it is surely an Apoplexie.

11. But if by a transmigration of this peccant matter, it become coagulated in the Lungs, then an Asthma; of which as also of the other syncritical Diseases, I may say as formerly hath been of the Quartain, That they are *Indubia Medicorum*, and therefore to be found only in the Catalogue of Incurables. And, what's the matter? Nothing but we want well prepared Medicines; which either our idleness, or our ignorance, or both, will not suffer us to attain to.

12. These Diseases being congenial in their causes, are the same in their Cures; therefore none of them curable by the solitary assistance of the *Spaws*: but by the power of absterfive and restorative Arcana's, such as the aforesaid remedies and the like.

13. It is true Dr. Wittie brings in two instances of the virtue of the water in the Palsie: but if you observe, The Disease in both Patients was at the declining hand; and probably nature by degrees might have wrought it forth, without the help of the waters. It's very probable the change of air, and the

exercise of the body by riding, might contribute as much to the Patients assistance as the water. Besides it may be, The paroxysm of this Disease might be hastened by the exorbitancy of the stomach and foulness thereof, which being rectified by the abster-sive property of the *Spaw*, might be alleviated thereby.

14. He gives one, and but one instance of help in the Epilepsie by the water. He tells us of an excellent success he had seen in that one that was Epilep-tick: but how or after what manner it appeared we must not know; though he doth indeed ingenuously confess, if the Diseases of the Palsie, Epilepsie, Vertigo, be idiopathick, be radically in the head, or otherwise though the malady arise from sympathy, if it be in the begining of the paroxysm; or in its state, the morbid humour being fixed, in such cases he acknowledgeth the impropertness of the water.

15. Where by the way take notice, that those three Diseases have not always the head for their principal seat; for though in the Epilepsie and Ver-tigo, in the one there be a vellication of the membra-nous and perhaps nervous parts of the brain: and in the other a consternation of the animal spirits, lodg'd there; and that either by a deuteropathy, being dis-turb'd from other parts, or by an idiopathy in the very membranous and nervous parts themselves: yet notwithstanding the Palsie hath not its original seat in the head, but in the *genus nervosum*, and the in-habitants thereof, viz. the animal spirits; and there-fore may be, and is in other parts of the body, *salvo capitis regimine*. For it is the catastrophe of these spirits, that gives being to the paroxysm of these Diseases, viz. of the Epilepsie and Palsie, &c. and when ever they are found smitten with a *status* arising from the antipathy of the putredinous, cada-verous

verous recreament, and the *anra vitalis*, there to be sure is the Disease; in what part soever of the body it is found.

To confirm which, viz. that the head is not the chief seat of the Palsie, I shall bring in a considerable instance of a paralytick Patient, to whom I had the hap to be called, after seven or eight other Physicians and pretenders to Physick had been consulted, he lives in *Fernedale* belonging to the Duke of *Buckingham*. This Patient had lingred most part of two years under his Distemper, the occasional cause whereof was, as far as I could learn, either from the damp of the earth, being employed to over-see, and sometimes did work in an *Hough* (as the Country-People call it) of *Blacomoore*, for some suppos'd Mine of *Pluto*, some treasure deeply lodg'd in the earth, but found none; or else by going into the water in the Summer time to Fish, either of which might occasionally give being to his Disease. He was gradually taken of all his joynts, and sometimes had neither sense nor motion in most parts of his body; but most frequently, if not altogether, had little or no sense, especially from the lower parts of his body downward: inso-much, as if any weight lay heavy on those parts, or any great heat from the fire scorched them, he was not sensible, nor at all complain'd. He could most what move all his joynts as he sate or laid, and that pretty nimbly; but when he came to stand, his knees thaked under him, his legs bended, and he glad to be held up from falling in ones arms. His hands and arms he could move very well, but when he came to take up any meat to put in his mouth, he always either left it or let it fall; so was helped by another, both for his meat and drink taking. Yet all this while *salvaregimine capitis*, had all his senses in his

his head, for saving a glimmering of his eyes whereby he could not read distinctly, which might very probably be from the weakness of the optick nerves, together with some alteration of the texture of the vitreous and cristaline humors thereof: I say excepting this weakness in his eyes, he had his memory as perfect as ever, could cast Account as well as before; had his hearing, taste, and smelling in good order; could eat his meat pretty well, without the least trembling or shaking of his head.

The Physicians he had consulted, had ordered him Vomits and Purges in great plenty, Unguents not a few, and Baths too many; for he was alway the worse after them. They so much enfeebled him, as that he lost the use of his limbs for a time after; and almost weakened him to death.

The Medicines I ordered him were chiefly volatile Spirits, viz. *Spiritus Salis Armoniaci* to smell at, and *Spiritus Sanguinis* to take inwardly, together with a Plaister of Mustard Seed and Vinegar, anointed over with the Balsam of Antimony, Amber, Turpentine, &c. applyed to the shaved crown of his head.

The volatile Spirits had a very remarkable operation, for so often as he held the bottle to his nostrils (which he would do a long time together, having an eager desire of receiving benefit by what was ordered him) he could after a while feel it run sensibly down the *vertebra* of his back, disperse it self into his loyns, and upon those parts to bring a fine gentle warmth, which before usually were very cold, and then run down to his very feet, also to run along his arms to his very fingers ends, with a dindling and prieking as it run along; but he had not this sense of this operation of the volatile Spirits (he smelt to)

at the first, till he had several times taken inwardly the *Spiritus Sanguinis*; which usually brought him into a moist sweat; thereby opening obstructions of the *genus nervosum*; after the use of these, for a while, he found a stiffness in the sinewy parts of his joynts; then began the shaking and trembling of his joynts (upon endeavouring to stand, or to go a little which before frequently troubled him) to go away; and that stiffness brought strength from the sinews into the musculous parts; so that he could after the use of these awhile, go a little alone upon the house-floor, and begun to get the sense and use of his hands, so that he can now, not only serve himself, but cut his own meat which he never could do before; since the Distemper seiz'd upon him, also can put on his own cloaths.

From all which duely weighed, results these following considerations. First, hence appears the reason why Patients do not usually reap that expected benefit from volatile Spirits, in these and such like Diseases; for these Spirits, whether inwardly or outwardly administred, or both, are neither palatable, nor pleasant to the smell; but being nimble and quick, do *ferire nares*, after a smart manner, which many people (too much indulging their sense and palat) will not have the patience to undergoe; but boggle and fly back at the first onset of such penetrative Medicines, and consequently deny themselves the expected efficacy thereof.

Secondly. That sense and motion are the products of life, and not the life it self; for this Patient sometimes lay void of any visible sense or motion: and that once or twice after he came out of his Baths, and yet life was present; so that all vital functions, whether fermentations, heat, motion, sense, &c.
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performed by organical parts, are but the sequels and posterior products of the *anima sensitiva*.

Thirdly. That sense and motion are different modifications of the animal Spirits in the *genus nervosum*, and membranous parts of the body. For it is not enough that nervous vessels be replete with so many of the animal Spirits, as to give motion to the muscles, and those to the joynts; I say to have such store of these Spirits in those vessels, as to cause motion, is not enough also to cause sense, unless these Spirits retain their natural string and acuteness, by which they communicate that we call sense, to all the membranous parts of the body, as happened to this Patient, and so *vice versa*.

The Spirits may be acute enough, and give their vibration to all the membranous parts, so as to cause sense; and yet the motion of those Spirits, may be so intercepted and dull'd, in the nervous vessels of some parts of the body, as to cause a defect of motion in the same parts, which happens in the generality of paralytick and apoplectick persons; only with this difference, that the *virus cadaverosum*, viz. the putredinous, anodynous, circulated recrement, which is with the explosive incoercible *flatus* thence arising, the efficient cause of all the Diseases of the *genus nervosum*, whether Palsies, Apoplexies, Epilepsies, Convulsions, &c. The foresaid anodynous recrement, is I say more or less according to whose graduated accumulation, the Disease becomes more or less mortal. For if this recrement be ultimately carryed and settled in the membranous parts of the body; then becomes the sense deprav'd as happened in this Patient: but if it seize upon the animal Spirits in their current glidings along their own vessels, it becomes their remora, mortifies them in some parts, thence

thence comes the depravation of motion and all symptomes, accompanying the common sort of Palsies, Apoplexies, &c.

Fourthly. Hence it also appears that the volatile Spirits in the blood, are of the same family with those of the *genus nervosum*, and membranous parts; only in their own vessels they receive a more natural determination to their proper functions of sense and motion. For unless the blood give being to the animal Spirits, they are not: and unless they were a kin to those saline Spirits in the blood, the Patient could not upon the use thereof, I mean of the volatile Spirits of blood, have perceived his joynts to have become more stiff and strong than before.

Fifthly. That there is a concatenation of the vessels of the *genus nervosum*, and anastomosis of one into another, through the texture of the whole body, was apparent; in that the Patient felt sensibly, the volatile Spirits which he strongly smelt at, to pass through the proccesses of the *medulla spinalis* down the *vertebra* into his loyns, and so down to his feet, also along his arms to his hands, and to his very fingers ends. Whence also it is more than probable, that the springy motion of the animal Spirits, in the nervous kind, have their original in the brain; for as the heart is the spring of all the Arteries; the liver of all the Veins: so likewise the brain of all the Nerves. Which yet doth not infringe our doctrine of the generation of the animal Spirits from the Spirits of the blood; being the pure defecate essential parts thereof, ingendred from all parts of the Arterial blood, becomes exquisitely elaborated in their own vessels: and at length receive a determination of motion in the brain.

Sixthly. That the head is not the chief seat of the Palsie,

Palsie, was evident in this Patient; for all the senses of his head were untouch'd, save a weakness as I said of his eyes: so that the animal Spirits in what part soever of the body, are the subject matter upon which the cadaverous recrement seizing, gives being to the Diseases of the *genus nervosum*. And that without respect to the head, unless the same efficient cause be there; and then indeed it gives original to the Epilepsie, Catalepsie, Convulsions, &c. of that part. More observations I could make, but am not willing to prosecute them to the full at this time, till I am more confirmed by some collateral experiments.

16. The Doctor gives us two instances of the Cure of the Asthma by the Water, *viz.* of an Alderman of *Hull*, and of a Gentlewoman. As to the first we answer, that it is very (if not more than) probable, That the Asthma, wherewith the Alderman laboured was from a deuteropathy, from a stuffing of the stomach, which might compress and streighten the Diaphragm, as also from some trivial obstructions in the lungs, which together might very well produce a spurious Asthma or Shortness of Breath; than which in ordinary foulness and oppressions of the stomach, nothing is more frequent: and upon that account might easily enough be cured by the Water, which doth notably cleanse the *sordes* of the stomach, &c. But that this was a real Asthma, I fear the Doctor mistakes in his diagnosticks.

17. And as for the other Cure of the Gentlewoman, I cannot otherwise apprehend from his enumeration of concomitant circumstances, but that it was from an uterine cause, *Asthma ex regimine matricis influentia prognatum*: and so was not primarily in the Lungs, but only secondary and symptomatical

tomatical, depending upon the depraved œconomy of the Womb; and that from inordinate obstructions therein, which was caus'd, as I suppose, from cold taken at an unseasonable time, when Nature was about its critical evacuation. Now the *Spaws*, by reason of the aperient Mineral Salt therein contained, was very proper for opening those obstructions, sending away what ought to be by those inferior chanel; and so consequently the cause being removed, the symptomatical Asthma might by degrees cease: in which judgment I am further confirm'd, in that he saith that not long after she had a Child.

18. As for Rheumes or Catarrhs, He mentions one that received benefit thereby, which Disease according to the *Galenists*, as I apprehend, proceeds from vapours, ascending from the stomach, which being condensed by the coldness of the brain, and obstructions in the head, distill *per foramen palati*, thorough the small chanel of the palate, or by the nostrils, which falling upon the Lungs brings a Cough, and sometimes a Consumption, and descending in other chanel, cause other Diseases; all which may indeed be reckoned *inter deliramenta Catarrhi*.

19. The essentials of which Disease we deny, *viz.* any vapours to arise from the digestion of the meat in the stomach, after such a manner as *vapores tenuis* to reach the head. Which suppose we should grant, let us see what absurdities would follow; first, no sooner would the meat and drink be taken into the stomach, but the heat and moisture therein would forthwith send up vapors, and we should thereupon be constantly troubled with Catarrhs.

Also the most sound strong stomachs whose heat was lively, would certainly always breed Catarrhs, because of sending up most powerfull vapours, from
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the liquid parts of food; also in cold Winters, from the forcible injury of the cold air, working upon the brain, and causing a cold Distemper there, we should never be kept free from a Catarrh; not to say what constant droppings there would be at the pipe of the Alembick, the Nose, enough to fill a Receiver in a little time; and to make every one go with one, hung at his Nose.

20. Also it would follow that all defluxions of Rheumes should have but one taste, and that insipid too; because if the vapours, suppose in a pot, arise from never so many sorts of meats, where there is a competent moisture: yet that which is sav'd by condensing, will have but one taste, viz. an elemental simple water; whence therefore according to their own doctrine, should the variety of consistence, and tastes proceed; that one should be salt, another sharp and fretting; one thin, and another more thick? So that difficulties and absurdities on all hands, sit upon the skirts of this doctrine of a Catarrh.

21. To be positive, We say the stomach no sooner receives food into it, but it closeth the upper mouth, and the membranous œsophagus claps close together; which also happens at every bit that is swallowed down, so that no vapours can pass it; and though vapours should arise (which no doubt in small quantities they do) from the lower concave of the stomach, where the food lyes, to the upper part thereof; yet they are carryed up with so easie a digestive heat, as that they circulate and fall back upon the digestive mass again, like a globe of glass half filled, whose neck is close sealed up, and set in an easie heat of digestion, the steams which arise, circulate back again upon the matter, without any pressing thorough the neck of the glass, or any danger of breaking the glass.

22. It is true that from the Incongruity of the food in the stomach, and from the reluctancy thereof, and the indigestion thence following, a *flatus*, *spiritus sylvestris*, or incoercible gas may arise, which not suddenly finding vent, by the opening of the upper mouth of the stomach, stretcheth the membranous parts thereof, makes one sick and faint; but at length getting passage by the upper Portall, flaps open the Oesophagus, whisks forth with a sudden noise of a ructure or belch. This *flatus*, or wind, carries with it the odour or taste of that part of the food which is most difficultly digested; and this is all the vapour which is carried up: which yet is not a vapour, but an incoercible wind, never condensable (as all vapours are) into water.

23. But it may be objected, That if no steams or vapours, are carried up from the stomach to the brain, as is usually and vulgarly supposed, how comes it to pass, that after meat, we commonly find our selves dull and indisposed, and, as it were, heavy to sleep many times, Is it not from the vapours which ascend into the head, and incline to heaviness?

I Answer no. But we are then inclinable to an heaviness and sleepyness, from the same cause we are inclinable to the same at any time; sleep follows waking, as night the day; heaviness and dulness are as precursory to sleep, as the evening to the night; waking is a vigilancy and action of the spirits, each standing centinel in the Portalls of the senses; sleep is a quiescence of the spirits from their action; the animal Spirits are after a time of working wearied, and willingly give themselves up to a lassation, for a further recruit: so that there is no need of vapours to arise into the head to cause sleep. For though a man fast 24 hours, or longer, and consequently hath small

matter left on his stomach to cause vapours ; yet is he nevertheless inclinable to sleep : and many can sleep as soundly upon an empty, as a foul stomach. Employment either in mind or body, keeps the Spirits in action, and awake ; once give way by Idleness, or solitary sitting after meat, or at other times, and a dulness begins, which is the Harbinger of sleep, and the Spirits fair and easily fall to rest.

24. Another Objection offers it self, How comes it, That when we drink plentifully of strong Drink, we become stupid and inebriate therewith, Is it not from the vapours of the strong Drink, ascending into the head, that makes a man drunk ?

The Answer is no. For strong Drink is no sooner taken (if in an excessive quantity) but the subtle inebriating Sulphur thereof begins to act upon the Spirits, whether animal or vital, communicable with the brain, by the nerves of the sixth conjugation, and every where at work in all parts of the body ; so that there is neither need of ascending nor descending, the Spirits which are overcome by the *toxicum* of strong Drink, are every where present, and as easily oppress'd in the stomach by the inebriating Sulphur of vinous Spirits, as in any place.

25. But before I go from the signment of a Catarrh, I shall give you some account how I apprehend that defluxion of Rheumie to happen, which I have denied to proceed from vapours ascending from the stomach. It is therefore a spurious depravation of the *Latex* which runs along with the blood, and is every where while in the channels of the veins and arteries, one with it under a ruby colour ; but upon any injury inflicted upon any part, is almost at hand, at the beck of the Archeus, ready to be separated from its boon companion the blood : and to assist towards a
washing

washing of that stain impress'd upon the weakned part.

26. So that if any injury of Cold become as a Thorn, to prick or offend any part (which is the same as is meant by taking of Cold) presently the *latex* (which upon all such occasions is ready at hand) is commanded away, to bring what speedy help may be to the injured part ; but not being able to perform that work, by reason of the prevalency of the thorny impression (if I may so call it) becomes rather tainted thereby, receiving an exotick ferment from the injured part ; becomes thereby the Patron of all those exorbitant defluxions, which are accompanied with pains, inflammations, or the like. This falling upon the *Larynx* already alienated from an injury of Cold, is sometimes turned into a copious mucous matter, frequently expell'd by a Coughing.

27. But if the *Larynx* happen to be debilitated through a continual defluxion thereof, then it falls upon the Lungs, where it perverts the alimentary juyce of that part, turns it into a putrelaginous corrupt matter, which as worm'd up by the force of a Cough, still increaseth as fast ; so as at length fretting upon the spongy substance of the Lungs, wears them away : hence Ulcers of the Lungs, *Tubes* or Consumption.

28. If the *Ossa Isthmoidea* in the Nostrils, be the parts affected from an injury of the cold Air, or smoke of Coals, or other bad offensive fumes ; thence a *Coryza*, viz. a Disease we should all be troubled with, in case that vapours actually ascended from the stomach to the head. If the eyes be the parts offended, thence an *Ophthalmia*, viz. a defluxion of Rheums, with an accompanied inflammation. If the teeth, or nervous parts therein be offended, and that from the injury of

the Air reaching thither through the hollowness thereof, thence an *Odontalgia*, viz. Tooth-ach, with a defluxion of Rheum, or portion of *Latex* showing down that way.

29. Besides the exotick quality the *Latex* gets from injured parts, to which it is carried by the next adjacent *glandules*, to wash away the things offending, or the impression it hath left behind; as if a Mote injure the Eye, a great quantity of *Latex* will presently flow to it, to wash it out; and that too from the founteins of bodies. The like happens, if any volatile acrimonious Spirits, as of vinous, Sal armoniack or Harts-horn, smite the Nostrils, presently an insipid *Latex* runs to the affected part, and makes the Nose run. The like also, if any unwonted taste offend the Palate, what a spitting doth it cause, which is nothing but an insipid *Latex*, which hasts away to wash off the impression the offensive thing hath left. So a thorn pricking any fleshy part, presently the adjacent *Latex* is sent away, which endeavouring to wash off the impression the Thorn hath left, but cannot, thence upon a further conflux of more *Latex*, comes a tumour, and a pulse, a pain and inflammation, &c. which being vitiated by the perverted ferment of the part, turns sometimes to an Ulcer.

30. I say, besides the hurtful quality the *Latex* gets from the injured parts, it also sometimes becomes depraved, and badly qualified, from some inbred cause, even in the very vessels of the blood, or in the lympheducts, often tinctured with an hostile, sharp, pontick, saltish acrimony; which upon that very account is often proscribed from the oeconomy of life, into some external parts, *quibus pœnas luit*, whom it punisheth with its own crime, tainting them with that they knew not before. If this by the motion of na-

ture

ture be thrown upon any part, it actually weakens it, by impressing its own character thereon; *Hinc tinctura ac impressiones venenosae in vitam durabiles*: if it be thrown upon the Lungs, it certainly causeth a *phthisis*, *Tabes*; or Consumption, wears away the life insensibly.

31. If upon the *meninges* of the brain; hence inveterate and most obstinate head-aches, not bending unless to the best of Arcana's: If upon the Eyes, it causeth Ophthalmia's of most difficult cure: If upon the Gums, it ulcerates them, loosening the Teeth, together with intolerable pains: If upon the Palate, it ulcerates and mortifies them; and in the French Disease, it is that spurious *Latex*, which retains the venomous properties, for wherever it settles it ulcerates, when tainted with the venom of that Disease. It is also the author of Scorbutick, and other cacoethical Ulcers.

32. The waters of the *Spaw* may, I confess, at the long run, and with continual use for a competent time, help to dint the acrimony of this spurious *Latex* if it be not too much graduated, nor hath not too immoderately weakened the parts; for then nothing short of noble Chymical Arcana's, that are enriched with a penetrative and restorative Balsom will effect the cure: such as are the Spirit of Salt of Tartar, the prepared Sulphur of Vitriol, the *tinctura lilii*, &c.

33. Now as the forenamed Diseases are not curable by the *Spaw*; so neither are Fevers, especially continued; for a Fever is a spurious fermentation of the blood, from a depravation of the Elementary juyce, coming too crudely into the third digestion, where it should be elaborated into vital blood; but by reason of its rawness, or other alienated properties, it perverts the natural ferment of the heart, cau-

seth a preternatural working and boyling in the blood, by reason of plenty of Heterogeneities that are heapt up with the nutritive juyce.

34. Now whatever hinders the natural fermentation of the blood from purifying it self by separation of Heterogeneities, that, I say, rather aggrayates, than abates a Fever; but such is the coldness of the water, (Cold being the great enemy to the ferments of the digestions) that it rather abates, and takes off from the vital fermentation, than otherwise; and so consequently suffers the blood to be stuff'd with a greater plenitude of indigested Crudities, thereby aggravating the febrile fermentation, and increasing all the Symptoms thereunto belonging.

35. And as cold water increaseth a Fever, so also all cold or cool things do more harm than good; yea, even the cooling Julips prescribed by the *Galenists*, yield very small help, if they do not actually prejudice Nature, in the purifying work of fermentations: so that whatever is administred in Fevers, if it have not respect either to abstersion of the *sordes*, in the first, second, or third digestion; or to promote the natural fermentation of the blood, where Heterogeneities are present, and so move *ad diaphoresin*; or to stay the overmuch fermenting, when it is spontaneous: Or lastly, to fortifie the digestions and vital spirits, against the assaults of the Disease. If it have no respect to one of these three, it is, I say, altogether impertinent and frivolous.

36. But neither cooling Julips, as I said before, nor the Shop Cordials, compounded mostwhat of Syrups, Confections, Strong-waters, and the like, all which are cumbred with store of Sugar, that clog and oppress the stomach; which thereupon can receive little benefit from the vertue of the Ingredients, and
so

so becomes tantaliz'd by the farraginous mixtures of Concretes, which taken simply, might help Nature more effectually, and be less burdensom to the digestions ; I say, neither do these stuffing Cordials contribute any help to the forenamed intentions. For what is truly Cordial, must have a power to allay Wind ; and if I affirm, That nothing is effectually Cordial, but such as doth *compescere flatum*, oppose, or take away Wind, I think I shall be able to make it good : and that thus.

37. By Wind, I mean such a wild incoercible Spirit or Gas (whatever we may call it) which ariseth from a reluctancy of the nutritive juyce, or reliques, or recrement thereof, to the ferment of the stomach, or other parts ; which the ferments not being able to master, either through their own debilitude, or through some stubborn untameable parts of the alimentary juyce, or recrement thereof, begets this wild uncoagulable Spirit we call Wind ; which being pent up, not finding vent, stretcheth the tunicles of the stomach, or membranes of other parts in other digestions, regurgitates upon the *anastomasis* of some vessels into the stomach, and upon others adjacent, which contain blood and vital Spirits, whom it almost stifles, put Nature thereby upon the Tenter-hooks : Hence pains, yea, all sorts of faintness and sickness.

38. Now whatever takes away this cause, the effect, or *flatus* failing, is truly Cordial ; but all other contriv'd Cordials, which reach not this root of Wind, are in vain. It is not enough to make one rift or belch, though that many times gives much ease ; but to strengthen the digestions, and to absterse the occasional cause, thereby preventing a spurious fermentation, whose product is a *flatus*. This, I say, is properly to allay Wind, and to become truly Cordial.

39. If we examine the *Galenical* Shop-Cordials; and their other Confectionary Medicaments, we shall find the main pillar of them all to be Sugar, witness their Electuaries, Looch's, Conserves, Syrups, Confections, Cordial waters, &c. by which the Concretes are so clogg'd, as scarce one ray of a specifick can escape the clouds to illuminate the Archeus, when they pass the stomach into other digestions; and through the prevalency of the Disease, wanting a volatilizing ferment, a great part of the Cordials, viz. the Sugar-part, turns into a *caput mortis*: which rather increaseth a feverish fermentation, than otherwise. Thus the very Cordials of the *Galenists* in the conclusion, prove burdensom to Nature.

40. And as cooling Julips, nor Shop-Cordials: so neither Phlebotomy, after that frequent manner it is used, availeth any thing as to the three aforesaid indications; not as to the first, viz. absterision of *sordes*; for in opening of a vein, both good and bad go together. If indeed the worst parts of the blood could be singled out from the rest, then letting of blood would prove a singular remedy; but the best way, the most balsamick parts of the blood, are carried forth with other parts thereof: inasmuch as the very next blood to the Orifice, is first carried forth, which perhaps is the most free from the morbid impression.

41. Nor secondly, doth it promote the natural fermentation of the blood, especially where the Disease hath, through continuance of time, weakned the digestions, impoverished the blood of Spirits by a solution of its compage, exhausted the volatile balsamick parts thereof; for in such cases, the mass of blood is so degenerated from its former *eucrasia*, as that an infusion of well-spirited balsamick blood, according to late Experiments, would rationally be
more

more pertinent, than the taking away part of that, wherein that spark of life yet remaining is lodg'd; for in the blood is the life, and the powers and strength of life; how much of the blood is taken away, especially by reiterate bleedings (as the custom of some; not to excuse the Doctor) so much is Nature actually debilitated, the digestions perverted, and the fermentation of the blood spoyled, at least so weakned, as to repair the loss of the volatile balsamick spirits requires a long time. And as the blood hath a fermentation whereby it endeavours the separation of congested Heterogeneities, whose presence cause some sort of Fevers, to which the use of Diaphoreticks are very proper; so also the fermentation thereof may sometimes be spontaneously spurious, set at work by attempting a new *crasis*, viz. intentionally to refine, and make it self a more depurate and defecate liquor, which in Children being set a working, occasionally from the inherent *recrumenta uteri*, causeth the Small Pox, Measles, &c. and being once set a work, doth sometimes over-ferment, thereby spending the volatile saline parts of the blood, and gives the Sulphur thereof an *empyrheuma*, separating the essential principles of the blood, subverting the *crasis* thereof, extinguisheth the vital flame; which overfermenting of the blood, not only happens to Children, but also to more grown persons, which requires some peculiar remedies, leasurely to put a stop thereto; and that either by Phlebotomy, which may answer the drawing forth of Wines out of the vessels, when they ferment too strongly: or by some proper Emetick, for such fermentations are rarely perform'd without some relation to the *sordes* of the stomach; which answers the taking away of the Tartar from the sides of the Wine-vessels, from whose too great plenty, sometimes happens

happens the overworking of Wines: Or lastly, by some noble *Arcanum*, whether specifick or catholick, which doth readily purifie the blood, rejecting the feculencies: for the blood may long ferment, and yet through an innate weakness, still retain the first feculencies: and unless helped by some *Arcanum*, would keep on fermenting, even unto the ruine of the balsamick principles thereof. These refining *Arcana's*, or purifying Medicines, answer that which some ingenuous Wine-Coopers perform, by putting some peculiar thing into the Wines, which will leisurely put a stop to the overworking of the Wines, but the skill of such persons is shewed herein, that what they put into the Wines, doth so specifically (if I may call it) stay the overworking of the Wines, as that no prejudice succeeds upon the radical principles thereof, so as they are not liable thereby to decay or degenerate: so likewise by the skill of the Physitian, such noble *Arcana's*, whether Specificks, or such as are more universal in their depurating operation, are to be administred, as may not only leisurely put a stop to the overfermenting of the blood, but restore it to its equal temperature, and proportional poyisure of principles, thereby renewing its *eucrasia*, and fortifying the balsam of life; But frequent Phlebotomizing, doth rob the blood of a great share of those remaining volatile balsamick Spirits, and therefore not proper for the restoration of its *eucrasia*.

42. Hence those that recover under their hands, do it with much lingering and tediousness, because of the great enfeebling of their Spirits by loss of blood, the very Weapon in the hand of Nature to manage its encounters with Diseases; which is strangely snatched out of its hands, by many of its pretended Friends, the

the Physicians; who, without pity, see her bleeding upon the spot, and cry out yet with flinty hearts, Blood, blood, yet more blood: Nay, after a ternary of bleedings, and as often vomitings and purgings, in an obstinate Fever, which would neither bend to this severe method, nor the life make its *exit* thereby. One able Phylitian being asked, What he would now do after all this? To which he ingenuously answered, That unless he run the same round again, he was at a stand, what to do further. The Querying person returned, That he did believe, if he run but the same round over again, from the beginning to the end, the Patient would by that time be perfectly cured of all Diseases.

43. I grant, That the single breathing of a vein, or artery, or a moderate Phlebotomy, may, and doth sometimes help in a Fever, where nothing of Malignity is suspected; and that chiefly upon the account of the ventilation of the blood, by which I mean a setting at liberty that incoercible *flatus*, which is the product of the febrile fermentation in the vessels of the blood; for this uncoagulable Spirit, or wild Gas, which alwayes results, and is the sequel of a spurious fermentation, if it be not dinted, or let forth, either by breathing a vein, or by Diaphoreticks (which opening the pores, let it go at so many minute portals) then it runs too and again in the vessels of the blood, and causeth erratick pains, restlessness, and inquietness of Spirits.

44. Therefore we find upon the ventilation of the blood, by a moderate Phlebotomy, that pains are abated, whether pluretick, or others; which the *Galenists* observing, take encouragement of arguing *à minori ad majorem*, viz. That if a little blood taking away, give some ease of pains, then surely the taking away

away of a great deal, must give more ease; and so, if they would yet hold on their argument, the taking away of all the blood, will give perfect ease, not only from pains, but from all diseases. Would they go no further than to argumentation, the Patient might very well bear with them; but they come to put this into action; they bleed once, its very well, I wish they would second it with a Specifick; they stay not here, but go to it a second and a third time, to the great loss of Spirits, and enfeebling of the Patient; and oftentimes the disease as much, if not more to cure than ever, and the Patient left less capable of it.

45. I confess I never order Phlebotomy oftner than once in a Fever; and that too, with reluctancy, bemoaning my self, That I have not yet attained to a Medicine, that will answer all Indications thereof; for it is only our poverty of noble *Arcana's*, which makes us stoop to so low and trite a method: and yet I may be bold to affirm, That I have been instrumental to cure Fevers of that nature, where the *Galenists* suppose most necessity of Blood-letting, even Plurisies, by Specificks, without Phlebotomy. Nay, further, I have been with some Patients, who in Plurisies have undergone a Galenical method of twice blooding, &c. (ready for the third time) and the Fever yet as high as at first; whom, after all this, I have, by the blessing of God, cured with a diaphoretick Specifick, once or twice repeated: and sometimes one single Dose thereof, hath so abated the pains, and allayed the feverishness, as that very little more hath been requisite to the cure, *Demptâ spinâ plenra infixâ per diaphoreticum cessat ipsa plenresis.*

46. As for the third and last Indication, viz. the fortification of the digestions and vital Spirits, Phlebotomy

botomy doth diametrically oppose, and that because it robs the blood of part of its treasure, surreptitiously stealing away its balsam; and therefore as I said actually debilitates the vital Spirits, making them louse their Topsails upon a fresh incounter of the Disease: so that though seemingly the Disease may not assault so strongly as before, it is not altogether through the abating the former force of the Disease, as it is from the weakening of the vital powers, who are not able to make as forcible an attempt, to expel the malady as before; and therefore flags before its enemy.

47. As in acute so in Chronical Diseases, the frequent use of Plebotomy is not commendable nor proper; and that because in long Diseases the digestions being deprav'd, the blood (whose *eucrasia* depends upon the vigor thereof) becomes degenerated from its sweet balsamick rubie essence, into an austere, sharp, pontick or saltish liquor: which growing old for want of due fermentation and circulation, re stagnates in the vessels, makes heterogeneous coagulations, whence Pains, Tumors, Ulcers inward and outward, the common product of Chronical Diseases.

48. So that what remains to be done in these chronick Diseases, is rather to super-induce a new reviving ferment into these old decayed wines, the blood, that thereby new volatile Spirits might be ingendred, and the sweet balsamick essence be restored; then yet further to weaken by Phlebotomy the sinking vital Spirits: which if they could speak, it would be *Vox querebunda, manibus quorundum Medicorum tyrannicis gemens, Hinc lachryma, viz.* Faint cold sweats; into which agony poor languishing Nature is often thrown, having both its strength, first weakened by the continuance and prevalency of powerful Diseases, and at last by the hand of its Physician (who

(who should if rightly so, be its helper) to have its little stock of vital balsamick Spirits, wasted by a palpable weakner, Phlebotomy.

49. Amongst the most obvious symptomes, and to the Patient most urging, is that of thirst; which because it is not natural, the more they drink the more they would. This according to the *Galenists*, proceeds from an hot and dry Distemper of the stomach; to answer which indication, they most frequently order cool and moist things: which if the cause of thirst were as they suppose, they would have a most facile ready way of Cure, in case that were true, *Contraria suis contrariis curantur; viz.* That every distemperature were curable by its contrary; for then supposing such and such degree of heat and dryness of stomach in a Fever, it is but applying the same answerable degree of cooling and moistning liquors; and the Cure would forthwith be effected. If so, Why are not the thirst in Fevers presently quenched? That after great draughts of cooling Julips, and the like are drunke down, they yet cry out Drie, Drie, as thirsty after a while as ever.

50. What? Can the elementary properties of cold and moist, so much conspire the Patients prejudice; as to forget their own natures of cooling and moistning? Surely these qualities (if they may be so call'd) of heat and cold, of dryness and moisture, must act one upon another upon the very contact; and no sooner can heat be encountred with cold, but the heat must be abated; and if the degree of cold be proportionable, must become quite extinct: so neither can driness meet with moisture in the like degree but the driness will cease.

51. So that indeed a Feverish thirst hath not these elementary qualities for its efficient, and so is not curable

curable by the contrary qualities; but hath a more abstruse cause, and that is from a depravation of the ferment of the stomach, which not being able to digest after the wonted manner, what is upon the stomach, turns it into recrement; which by the heat of the part (having lost its curb the ferment) is burnt into a kind of *Alkali* or friable mass, which being fast impacted in the tunics of the stomach, becomes the efficient cause of a *febrile* thirst.

52. These burnt Alkalizate *sordes*, parch the very membranous parts of the stomach, œsophagus and tongue (which membrane, is but as one continued web overspreading all those parts) thence the intollerable thirst, foulness, roughness, and parchedness of the tongue, which by abstinence from drink (as is the foolish custome of some Physicians, who understand not the Disease, too strictly prohibit) the Fever becomes the more increased, the thirst the stronger, and all the symptoms more exasperated. For there must be some liquid thing of necessity to dilute and soften these burnt *sordes*, though it do not satisfy and quench the thirst, or else all things go the worse; but if the skill of the Physician be such, as to mingle with these diluting potable liquids; something to absterse these *sordes*, and to satiate these Alkalizate recrements, then he effects something as to the real quenching of thirst, which otherwise proves obstinate and rebellious to all simple liquids.

53. For if all simple water, or fermentally married to a vegetable juyce, *viz.* Beer, Ale, or Wine, be thrown into the stomach, upon these friable *sordes*, they do but (and that scarcely) for a moment quench the thirst, but by the untameable heat of the stomach; are cast into vapours, and by sweat
or

or insensibly, are driven through the pores of the body: and in the conclusion encrease the heat, cause cold sweats, faintness, debilitudes and wasting lassitudes, after the manner of water poured on an hot stone, is presently dispersed *vapore tenuis*; or as Spirit of Wine poured upon an *Alkali* of Tartar, causeth a great heat, more than was before.

§4. But if these *adust sordes* be absters'd, by the well prepared Salt of Vitriol, or other proper emetics; or some proper solutive, that may cleanse downward the recement of the primary digestions, and be seconded with Spirit of Salt, Sulphur or Vitriol, acuating the Patients common drin's, together with the use of some anodynous Diaphoreticks, not only the thirst will be abated and quenched, but the Feverish fermentation, and consequently the Fever it self. I have often wondred the *Galenists* should not more seriously take into consideration the efficacy of Diaphoreticks, or sweating Medicines, in Fevers; in as much as in the whole round of their Practice, they find not a more effectual means to quench thirst, and to abate a Fever, than by *Sudorificks*, which is most obvious both to them and to ordinary People, and yet there is nothing they less frequent. If it were no more than observing the operation of a Dose of *Laudanum*, methinks it might convince them of the excellency of Diaphoreticks, and put them upon ingenuous enquiries, how they might promote, and improve that stock of Diaphoreticks, they have in the Shops; might I say put them upon enquiring, how a few grains of *Laudanum* should so quiet the Spirits for a time, quench thirst, and allay pains, and all this as a Diaphoretick; which surely if the narcotick Sulphur was castigated, and the power of the volatile Diaphoretick Salt thereof exalted, would

would prove a much more effectual Diaphoretick, than any *Laudanum* in the Shops.

55. As for *Antimonium Diaphoreticum*, because it is Chymical they are afraid of it; and if they order any, it is in so inconsiderable a quantity, as the effect cannot answer the Patients expectation. They will prescribe 3 grains, it may be 4, 5, 6, or 7 grains, and a great Dose too; and this forsooth must be clogg'd with some other farraginous mixture, which together makes such a confus'd jumble upon the stomach, that the *Archem* or vital regent, knows not what to make of it; for by their mixtures they miss the mark of Specificks, and thereby of the best Diaphoreticks: In effect, do nothing sincerely, *viz.* without mixtures in the whole course of their Practice. They will wonder perhaps if I tell them that of this *Antimonium Diaphoretick*, which they scruple to give 6, 7 or 8 grains; I can and do with good success, give from one scruple to an whole dragm, which is 60 grains, and that without scruple or danger, but with great satisfaction to the Patient. *Bezoardicum Minerale*, another as dangerous *anti-febrile* Diaphoretick (as they account it) as the former, of which; they scarce dare give above 3, 4 or 5 grains; of which, I with the like success as the former, give from half a scruple to 24 grains. Indeed they are both of my own Preparation, and therefore dare more confide in them.

56. Now the conclusion of all this is, That Diaphoreticks whether Vegetable or Mineral, after a previous absterlion of the primary digestions; are the only quenchers of thirst, abaters of pains, allayers of Feverish fermentations, composers of the Spirits; and in fine, the chief Curers of Fevers: and therefore whether duely to be considered, let

the World judge, seeing it conserves thousands of Lives. Thus far as to particular Diaphoreticks. Besides which, *Helmont* speaks of an universal Diaphoretick or *Panacea*, by the name of *Mercurius Precipitatus Diaphoreticus*, which is a fixation of Precipitate, by the cohobating the *Elementum ignis*, extracted out of the Vitriol of *Venus*, at last being strongly fired, becomes fixt, and isedulcorated by repeated distillations of rectified Spirit of Wine, from it to ten times, and then becomes sweet; and is also called *Aurum horizontale*, of which he saith, *Omnem sanat febrem unicâ potione: Hecticam intra Luna decursum; oretenus enim sumptus, curat carcinoma, lupum & quodlibet est hominum cacoethes, ulcus sive externum, sive internum, itemque hydropem, Asthma, & Morbum quemcumque Chronicum; complet solus desideria medentum tam in Physicis quàm Chirurgicis defectibus*; by all which it may certainly be concluded to be a *Panacea*, in as much as (according to what he affirms) it cures all acute and Chronick Diseases. *Sed nobis non licet esse tam disertos.*

57. I do not here pretend to it, but doubt not of the veracity of that noble Philosopher, who wrought Thirty Years in the search of Natures choicest Secrets, whose Master-piece was the Liquor *Alkalest*, *Precipitatus Diaphoreticus*, *Arcanum Corallinum*, *Tinctura lilii*, *Sulphur Vitrioli*, *Metallus masculus*, *Elementum*, *Lac perlarum*, the Spirit of Salt of Tartar, *Elixir Proprietatis*, &c. all which conspire the restitution of the integrity of health, though disturbed from what occasional cause soever. For the Life, or *Spiritus impetum faciens*, is but one, receives the influences of Diseases into it self; which according to the variety of occasional causes becomes differently affected and disturbed: whence the multiplicity

tiplicity of Diseases, which by an highly graduated Medicine reaching the very radical principles of this *Archeus*, or regent Spirit of Life, corrects the enormities and irregularities thereof; and by absterfing the offending occasional causes, restores it to its pristine integrity; *Vita & vis ejus est unica & integra, nisi à causis alienis degeneretur, tum tanquam serpens sedit in seipsum, & Morborum evadit Matriona; quâ restitutâ eadem ut antea, est vita integritas.* What noble effects, these generous and universal remedies may have upon the vital *Archeus*, in order to its restitution from the burden of Maladies, may not uneasily be apprehended, by those who do but see the efficacy of their substitutes, whether in Chronic al or acute Diseases.

S E C T. 9.

I. **T**HUS having run through the Diseases, or at least most of them, to the Cure of which the *Spaw* contributes little help; Now come we to those Diseases where the efficacy of the *Spaw* is most discernable, viz. the Scurvy, Dropsie, Stone or Strangury, Jaundise, Hypochondriack Melancholy, *Cachexia's*, and Womens Diseases proceeding from the obstructions of the *Menses*: all which (saying that of the Stone and Womens Diseases) as they have their first Springs from the irregularity of the ferment of the Stomach, Spleen, and some next succeeding digestions; so they are thereby more capable of receiving the virtue of the *Spaw*, which chiefly operates upon the stomach; absterfing the *sordes* thereof; whence it becomes very proper, against frequent and immoderate Vomitings, Heart-burnings; from an over-acidity, grating upon the

upper mouth thereof, Pains of the Stomach from the like cause; &c.

2. First as to the Scurvy, which Disease at its full state, though it ultimately vitiate the whole habit of the body and brings on a *Cachexia*; yet the first seminaries thereof are found in the Stomach, where the nutritive juyce, being not well concocted by the ferment thereof (for no solitary heat, but a ferment, is the agent of concoction) the first stone is there laid towards the building of the Scurvy: this first alienation of the alimentary juyce, being not corrected nor amended in the subsequent digestions, comes crudely into the third, into the mass of blood, ready to receive the vital ferment in the heart, which finding many untameable heterogeneities cannot *sub jugum trahere*, bring it into conformity; whence the *crasis* of the blood becomes perverted from its sweet balsamick essence, into a fourish, saltish, and (at the height of the Disease) vapid liquor.

3. Now the esurine alumenish salt of this Spring, doth notably absterse the feculencies of the stomach, and thereby strengthens the ferment thereof; which to Persons who have not or (if they have) but in a remiss degree, the Water may be of use to prevent the Disease; and to those who have it in an intense degree, it will abate the first spring or feeding cause thereof; and by the penetrating Mineral Salt in the Water, may insinuate the *limen* of the third digestion; where (especially if helped by the addition of some restorative balsamick Medicines) it may in continuance of time, overcome that *Dyscrasis* of the blood, by removing that which is superfluous, may replenish the blood with its wonted vital ferment, and by dunting the spurious saltiness thereof, may restore it to its primitive sweet balsamick nature.

4. The

4. The *Spaw* Water, together with the change of air is pertinent to the aforesaid purpose; especially, as I said, if seconded by other penetrating Medicines, which hath a power to dint the scorbutick ferment. Of which sort are the tincture of Antimony, the right prepared Spirit of Salt, the Volatile Salt of Harts-horn, the Spirit of Salt of Tartar, the Volatile Spirit of Scurvy-grass, *Ens Veneris*; all which as a balsamick condiment, season the nutritive juyce, separate exotick heterogeneities therefrom, by their proper emunctories, sweetens the blood by renewing its former volatile balsamick Spirits, and restores it to its *pristine Eucrasia*: which done, the scorbutick products, whether Pains, Tumors, Ulcers, sore and swelling of the Gooms, looseness of Teeth and the like, ceaseth; and the Scurvy is Cured.

5. Secondly, The Dropsie may be helped by the *Spaw*; which to affirm, though at the first sight it may seem unreasonable and contradictory, because in this Disease the blood is already too much diluted with a waterishness: yet if we consider the efficient cause, which is chiefly an obstruction of the Reins, the strangeness will be taken away; for although there be a real vitiating of the ferment of the stomach, and an *adust Alkalizate sordes* impacted in the tunics thereof, whence a Feverishness and a pressing thirst constantly attends Dropical Persons, which Fever is not primary but symptomatical.

6. I say though the ground-work of this, as of most Diseases, be in the stomach; yet is the main cause an obstruction of the Reins, which being the principal emunctory of the potable parts of the nutritive juyce, whether being separable from the

mass of blood, by the emulgent veins, or by any other nearer passage to the Reins, if through the congestion of some *mucons* recrement, the small vessels are obstructed (as usually in this case happens) then is the superfluous liquid *latex* (ready for separation) regurgitated, either back into the mass of blood; and thence into the habit of the body, whence that *species* of the Dropsie, called *Anasarca*, which by the *Anastomasis* of the vessels, sometimes lets a part thereof fall into the legs, swelling them, especially towards night; and at other times swallows them up again into the former vessels, and the legs become unswell'd again.

7. Or else the liquid potables, coming by a shorter cut to the Reins by reason of their obstructions, flows back and is heaped up between the *Omentum* and *Peritoneum*; which stretching the membranes thereof, bears up strongly against the *Diaphragm*, thereby contracting the cavity of the Lungs, makes the Patient short-winded as commonly they are.

8. This congested potable *latex*, accompanied with a *flatus*, gives being to a Tympany; and hath no urinous Salt in it, as that had which was about separating from the blood, and by the obstruction of the Veins flowed back again into the mass: and therefore those who are tapp'd for the Dropsie, let forth an almost insipid liquor; so that water which passeth from those who drinke plentifully of the *Spaw*, has no urinous Salt, and so neither tincture nor sapour.

9. Now the *Spaw* water doth notably cleanse the stomach, first by loosning and dissolving the close sitting *sordes*; and that through the dissolving power of the alumenish Mineral Salt, which gradually attenuates and thins the *viscons* recrements of the stomach,

stomach, after which solution of the otherwise fixt feculencies of the stomach, the plentiful gulping of the water, doth easily wash it away by stool; besides which, a great quantity of the water acuated with its Mineral Essurine Salt, passeth the short way to the Reins, I mean by those chanel, that great drinkers of Wine, and Strong Drink, have to convey away, suddainly, the potent parts (of what they take in) to the Reins; whereby the penetrative power of the Essurine Salt, which as a Solvent in the water, dissolves the coagulated matter, opens the obstructions, and makes free passage both for it self, and for the *exit* of the restagnating *latex*, which before stoted in the *Abdomen* and swell'd the belly.

10. That obstruction of the Reins is the chief, if not the essential cause, of the super-abundant stoting of the potable parts in the *Abdomen*, is manifest; because all Dropfical Persons piss very little, and that often with difficulty: so that the most part of that which should pass forth by urine, through obstructions regurgitates back upon the bowels, or else fills the bloody vessels with a dilating over-plus *latex*; whereas if the passages were open, and the current kept clear, all the superfluous watry parts, would be dreined away by their natural and proper chanel, and so all would be well.

11. The *Spaw* therefore hath its efficacy in Cure of the Dropfie two ways, *viz.* by absterfing the *sordes* of the digestions, and by being a Diuretick; not to say that in some obstinate Dropfies, there may be an extravasated blood about the Reins, which may so irritate the innate Spirit of those parts, as to make a spontaneous occlusion of the vessels, and resist all Medicines, except the noblest of Chymical *Arcana's*. I 4

12. Those

12. Those Medicines which chiefly relate to the Cure of the Dropsie are, as I said, such as are absterfivē, and diuretick, together with such as have a restorative astringency, communicable to the debilitated membranous parts; of which sort are the lixivial Salts of Vegetables, whether of Broom, Juniper, the Vine, Wormwood, or the like (among which there is small difference) wherewith the ordinary drink of the Patient is to be acuated: also the *Cinnabar* of Antimony often resublim'd, the Spirit of Salt of Tartar; the *saccharum Martis* or Sugar of Steel; *Bezoardicum Minerale*, which is *Riverius* his Diaphoretick out of the Butter of Antimony; the *Pilula lunares*; of which last, I must confess, I never found any considerable success, and for the sake of the corroding *Aqua fortial* or nitrous Spirits, shall for the future rather advise against, than otherwise; also the magistery of Wine, which is the fixt Salt of Tartar so prepared, as to dissolve in the most rectified alcohol Spirit of Wine; which being often purified by reduction, is a noble Diuretick, essential Salt of Tartar; also the *Precipitatus Diaphoreticus*, and *Precipiolum Paracelsi*; the sappy liquor of the Birch, &c.

For most of which Medicines, if you consult the dispensatory, you will be mistaken; they are not attained to by idleness, and meer speculation, but by boldly handling the coals, and putting our fingers into fire.

13. The next Disease is the Stone and Strangury; upon which the *Spaw* hath the more efficacy, because a great part of the water glides through the Reins and Bladder, the places where Gravel and the Stone have their nativity; so that first by the absterfivē virtue of the Essurine Salt in the water, it hinders the encrease

encrease or growth of the bulk of the Stone, by carrying away the recremental *sordes* of those parts, also by often drinking and that too great quantities of the water, it keeps the current open, dilates the passages, and takes the opportunity of slipping a Stone now and then, with a stream of water, through the *sphincter* of the Bladder.

14. But as to a resolution of the Stone, into a liquid juyce, by a retrograde *Analysis*, is not feasible either by this or any other Spring; but only (at least chiefly competent to the Alkahestical Preparation of the *Ludus Paracelsi*, *calculoforum Solamen magnum*; of which, is the *Alkahest* distilled from the *Ludus*, by which the *Ludus* is reduc'd into a Salt, dissolvable in the Air into a Liquor; this digested in a sealed glass, until the Salt swim upon the top of the attracted moisture, in the form of a greenish Oyl or *Axungia*, of which Fourteen Grains sometimes repeated resolves the compage of the Stone, of what magnitude soever; and upon the solution, is also expelled; and thereby the Stone perfectly Cured, according to the process of *Paracelsus* and *Helmont*, who both (as they say) had it: by which, as *Helmont* reports, not only the Stone was reduced into a liquid form, and driven forth; but also the *inclinatio petrifica* was taken away. I have by a succedaneal Preparation, so opened the body of the *Ludus*, as that it would yield a deep saturate green tincture to Spirit of Salt, as also to another liquor of Salt I have, by me; but what that will effect, as to the Stone, I have not yet tryed. The well prepared Spirit of Salt, *Helmont* highly commends for the Strangury, and the *Tinctura Arophi Paracelsi*.

15. The Jaundise if not too deeply graduated
into

into that called the Black; is also curable by the *Spaw*; and that because this Disease proceeds from an error of Crudities in the second digestion, transmitted into the fifth or habit of the body; where that which should of due have been separated by the right fermentation in the second digestion, was carried into the last digestion, and there discoloured the blood in the ultimate *fibres*, through the whole habit of the body: Now the *Spaw*, as I said, helps to separate, that which of due ought to be separated; by opening the obstructions of the second digestion, and so may prevent the feeding of the Disease, from its own original source, and by the help of specifics may thoroughly be Cured; of which sort, are *Ens Veneris*, Spirit of Urine, *Alkalies*, *mille pedes aliaque insecta*, *qua abstergunt secundam digestionem*.

16. Now come we to Hypochondriack Melancholy, A Disease when deeply seated, puzzles the *Spaw*, and the best method of usual Medicines. The place of its nativity is probably the Spleen, whose ferment if vigorous, is not only to make a separation of some impurities of the blood, not separable by any other part: but also as a specifical ferment, to add some new and noble qualities to the blood, making it more pure and spiritous by separating the feculencies thereof, promoting the clarity of the *Regimen* of the animal Spirits, that Looking-glass of the Soul, which if pure and polite, gives pleasure and solace to the Soul in the Body, causing generous reflections, and shaping perspicacious Idea's, helping acuteness of fancy, solidity of judgement, and tenaciousness of memory.

17. Whereas if the fermental elaboration of the blood in the Spleen be deficient; and thereby the

sordes

sordes become unseparated: thence a steam ariseth which soyls the vessels and muds the animal Spirits, darkens the imaginative part, and with a melancholy vapour clouds the fancy, Hence all the irregularities and disturbed fancies of Hypochondriack Melancholy:

18. The Spleen and the regiment thereof, is *Vulcan's Shop*, where the materials lie for forging of all Idea's, if the materials be good and artificially handled, a sound structure of fancy may well be raised: but if a wrong cast happen, either through the indisposition of the materials, I mean the blood, or through the error of the work-man, I mean the ferment, the structure will prove accordingly, *viz.* the fancy will be inverted, and the Idea's thereof become preposterous.

19. Now the meat and drink we commonly take, together with the exorbitancies thereof, have no small influence upon the Spleen, and its oeconomy, and consequently upon the animal Spirits and the Soul,

— *Corpus onustum*

*Hesternis vitiis, animum quoque praegravat una
Atque affigit humo Divina particulam aera.*

For if a good orderly Diet be observed, of wholesome food, with much temperance and moderation, Chronical Diseases cannot have power to exercise that tyranny they usually do, nor can the irregularities of the digestions prove so irreducible, as they do by excess of living; in as much as all the digestions take their nutritive juyce in order one from another, so as if the first prove a glutton overcharging its ferment, the rest share with the excess, and communicate

communicate it one to another, till it hath gone the round, and in the conclusion reach those Spirits, whose fine texture makes them nearer the Soul, by which it also becomes affected.

20. The *Spaw* hath power to help the carrying of the dreggy parts, left after the digestion of the stomach is over; and thereby helps the refining of the vessels, so as the nutritive juyce, may not come replete with crudities to the other subsequent digestions, and so subducts from the Disease by hindring the affluent cause: for so far as the virtue of the Effurine Salt in the water can reach, especially in the common passages towards the bladder, it doth pretty well cleanse and therefore proves effectual in those Diseases, native to those parts; but doth scarce thoroughly penetrate those more abstruse recesses, where the main concerns of animal Spirits and the forging of Idea's are transacted. This is left for the other more penetrating Medicines to perform, which perhaps one with the other, may the better complete the Cure.

21. The Medicaments of use in this case, are such as are absterfive, of a penetrating nature, oppose a *flatu*s by allaying the spurious fermentation, and can dulcifie the blood and humours, by all which composing the Spirits and settling every thing in order; of which sort are a *Tartarum vitriolatum*, not such a one as is vulgarly made in the Shops, with Oyl of Vitriol: but with the Effurine Salt of Vitriol, that hath not undergone any force of fire, readily dissolvable in any *Vehicle*, which the other will not. The Essential Salt of Tartar, the *Sal Chalybis*, the Spirit of Salt of Tartar, the *Spiritus Veneris*, Coral and Crabs-Eyes; and probably above all the *Aurum Horizontale*, or fixt *Mercury*, which being a *Panacea* answers all Indications.

22. Now

22. Now come we to discourse of Womens Diseases, and of the virtue of the *Span* in the Cure thereof; whose Diseases proceed chiefly from obstructions in the Matrix, whereby the redundant blood flows back, or from a debilitude of the Womb, whereby the blood becomes dielyn'd away in too great quantities; whence *Lypothymia's*, Faintings and Swoonings, &c.

23. As to the obstructions of the superfluous blood, which should be carryed away by the vessels of the Matrix, in form of the *Menses*: We must know therefore, that the *Menstrua* are a certain portion or efflorescence of the blood, granted by God in nature for proper ends, viz. both for yielding matter and corporeal bulk to the *fœtus* or *embryo* in the Womb; as also for nourishment of the same, until it come to the birth, It is I say a certain portion of the blood remaining after a full refection of the body, ingendred within a Lunar Moneth, and sequestred from the rest of the mass to the foresaid end; this matter destined to the generation and nutrition of the *fœtus*, long foreseen of Nature (which never acts in vain *quoad intentionem*) in the female, is the main drift and aim of the *Menstrues*.

24. The manner of their generation is thus, viz. The blood in the intermitting time, encreaseth in its bulk in the Veins and Arteries, so that one part thereof being supposed to supply the deficiency of what is daily spent by transpiration, the superfluous part increaseth the mass of blood, and at length stretcheth the containing vessels with its plenty, whence a *turgescence* and *plethora* of the vessels.

25. Then Nature (not unmindful of its office) endeavours at the next critical Lunar season, to employ a little the *turgid* vessels, by certain passages and

Anasto-

Anastomoses from the vessels they run in before, into the *secundines* or chanel's of the Matrix. This *nifum* or endeavour is done two wayes, *viz.* both by an apertion of the *Anastomosis* from some vessels into others, as also by an innate contraction of the *fibres* of the sanguinary vessels, by which they endeavour to free themselves (*annuente natura*) from the oppressing *Plethora*; for there is a certain contraction or compression, proper to the Veins and Arteries, by which the circulation of the blood and nutrition of the solid parts succeeds the better: so that those vessels have a kind of connate *Systole*, by which they compress themselves, and after their wonted manner, become free from the stifling plenty of blood.

26. That there is a *Turgescence* of the vessels about the time design'd by Nature, for the critical evacuation, is manifest in Virgins, Widows, &c. to whom such a compression of the veins, and such an apertion of the *Anastomoses* of the vessels are at the critical menstrual season denyed; *oculare præbent testimonium defectuum naturalium; signaque in fronte gerunt aliquid amplius in venis ac arteriis adesse*; Whence sometimes *Pustules* in the Face; Redness of Eyes, with a swelling of the circumjacent veins; whence also Tumors in several parts of the body; Pain in the head and other parts; and many other Diseases, which owe their original to no other than this essential cause.

27. All which indicate a *Plethora* or *Turgescence* through overmuch plenty of blood, whence the mass of blood through a distention of the membranes of the vessels, doth as it were restagnate therein; especially in the *Bronchy's* of the Lungs, where the blood setting (as the vulgar word is) and the motion of the *Diaphragme* being unproportionable

nable towards its agile transmission into other parts, and that by reason of the Laxation and flagging of the membranes thereof, over-charged with too great afflux of blood; Whence an Indisposition, Dulness, and Sluggishness of the body, Shortness of Breath, an oppression of the *Præcordia* or upper mouth of the stomach, &c, And in a further degree of this restagnation or setting of the blood, proceeds sometimes *Syncope*s, Palpitations and Suffocations; yea at length Death it self. And all this from a bare solitary restagnation of the blood in the vessels, through a retention of that which should naturally be separated at its due critical season.

28. Now further if the blood upon these retentions, restagnate about the mouths of the vessels of the Matrix; especially if tainted with any virulency, from the reflux of some corrupt Menstrual blood, whose current hath been stopped by cold passion, or the like, at the very time of Critical evacuation: thence the *Archeal Regimen* of the Matrix, that *Animal furibundum*, becomes rouz'd up, which acts at a distance, *viz.* in other remote parts of the body, by that manner of operation which *Helmont* calls a *Blasf alterativum*, which I cannot nearer compare to any other than to the *spiritus sylvestris*, or *flatus incoercibilis* mentioned before, yet is not formally the same,

29. It is an influential manner of acting, which I judge to be *Identical*, with that whereby the Soul acts upon the Body by passion, darting a Raye here or there, upon this part or the other, *ad libitum*; for this influential *Blasf* (or what other name we may give it, so it comprehend the nature of the thing) it exerciseth its tyranny on remote parts, *viz.* the Hypochonders, Stomach, Lungs, Brain, &c.

&c. as by violent forcible motions; and tensions of the Hypochonders (enough to require the strength of two or three men sometimes to keep down) and by causing the blood to restagnate in the Lungs and Heart; whence a cessation of the Pulse, and circulation of the blood, also an instantaneous Asthma, together with a cespitation of the animal Spirits, accompanied sometimes with a *contorsion* of some *musculous* parts; whence Convulsions and the like: in the conclusion it puts a stop to all the digestions and functions of the body; save its own and that irregular.

30. These *Hysterical* paroxysms are often occasionally brought on by passions in those women inclinable thereto; which like as a Feverish *Delirium*; imitates the *narcotick* Sulphur of *Opium*, or rather as the animal Spirits, are identically wrought upon by a Fever; as by a large Dose of *Opium*, both working the same effect, perverting the imaginative faculty, causing wandring irregular Phantasms, and sudden irrational Idea's, with preposterous glances, the operation of the one scarce distinguishable from the other: So in like manner the uterine *Archeus* or *Spiritus impetus faciens*, connatural to that part, is equally irritated and provoked by a passion of the mind, as by a virulency from regurgitated foetid Menstrual blood, recurring upon the innocent mass thereof, in those I mean inclinable to these *Hysterical* Fits.

31. This uterine *Faber* takes a like occasion from both to become furious, and to act by its alterative *Blas*s upon other distant parts; and that *à vi regiminis* as the noble *Helmont* calls it, whereby it equally, from the one cause as from the other, stretcheth the Hypochonders, by a furious incoercible *flatu*s; which

which if it should proceed from a windiness of the Matrix, according to the vulgar *Galenical* notion, the part had need to be charged with wind, like a gun, yea and ramm'd too (which how they will be able to make forth I know not) and after every discharging, the wind or air must be forcibly attracted by the mouth or posteriors to make a fresh charge for a new fit, which forcible attraction hath never yet (that I ever heard of) been observed; only if the Patient get a rift, the incoercible *flatus* gets vent, and she is better until the next arbitrary *Blas*s or *flatus* stretch the parts again.

32. This flatulent *Blas*s of the uterine *Archem*, is far more prevalent than the Elastick power of the air; for, if the trite notion were true, That the Fits of the Mother were from a bare windiness of the Womb, which rowls up the *Abdomen* to the Hypochonders, puffs and swells up the parts; then must the Womb be supposed as a Pneumatick Engine, out of which the air being exhausted (how or by what means I know not) the air of the convex part must of necessity have a strong pressure or Elastick force to return into the concave thereof, to supply the forced vacancy: so that the pressure would not be so much from the Womb as towards it, unless at the time of the suction of the air. Which suppose we grant, yet would the external pressure of the air be as strong to return into its vacant and deserted cavity, and thereby force the membranous parts of the Matrix to give way, flag and fall before it, till it came to an equal poise again; and so no forcible wind would thence press the adjacent parts to any such injury, as ordinarily the uterine *flatus* doth.

33. So that, let them contrive all the ways imaginable, how to solve all the urgent *Phænomena's* of

this *Hypothesis*, grounded upon a solitary *flatus*; which according to the ordinary acceptation, is only a *latio* or *motus aeris*, and we shall find a flaw in them; for as such, though forced with Engines in the body (which we know not how they can prove) yet cannot perform, neither with that clerity nor force, what the otherwise violent operative *Blas*s of the Matrix can suddainly display, even *ictu oculi*. For as a blast or malignant influence in the chanel or *perole*di of the air, doth suddainly smite and wither branches of Trees, or other Fruits of the earth, or Faces of People, where they hit; so (*quantum hand passibus equis*) where this malevolent influential *Blas*s or incoercible *flatus* of the Womb hits, those parts are afflicted with the raging force thereof. But to return.

34. Now as obstructions and regurgitations of the Menstruals and passions of the mind, are the *Procatartick* or occasional causes of *Hysterical Fits*, and concomitant symptomes thereof: so, as I said, are debilities of the *Placenta*, and laxation of the vessels thereof, the cause of great evacuations, which sometimes happen to the great impoverishment of the blood and spirits, and much enfeebling of the Patient, and the cause of *Syncope's*, *Lypopsychia's*, Faintness, Swoonings, &c. and that meerly by the loss of blood and spirits.

35. The Cure of these uterine Diseases is next to be considered, where if the Diseases be from obstructions making the blood flow back into the mass thereof, before a menstrual defecation of the same, in such the *Spaw*, if in any Diseases, is effectual; and that because the Essurine Salt thereof, is very prevalent in opening of obstructions, watheth away the *sordes* which usually cling to the osculations of the

the vessels of the Womb; and absterfeth notably every tartareous recement fastened to the sides of the said vessels: in as much as there is a *Sal quoddam minerale excrementitium*, or *tartarum resolutum*, of which whether the Womb, Liver, Spleen, Reins, *Pancreas*, *Mesentery* or Stomach be the *minera* thereof, it causeth, as *Helmont* saith, great trouble to the Patient (*insignes parere laborantibus molestias*) which will not obey the mandates of common solutives.

36. In order to which, if *Sal Martis*, viz. the Sugar of Steel, or the *Crocus Martis*, or Powder of Steel it self, be given after a due manner; as soon as they come into the stomach, the Salt of Steel being in a *Vehicle*, whether water or wine, the *Crocus* therein contained precipitates, unto which the foresaid spurious excrementitious Salt hasts, becomes coagulated thereon; and carryed away by seidge: whence the blackness of excrements in those who take chalibeate Medicines. The same also happens if either the *Crocus* of Steel, and powder of Steel be inwardly taken; and in some cases very proper and effectual.

37. Now because in the *Spaw* water there is no *Crocus Martis*, no body of Iron at all, but only a sleight touch of the *minera* thereof, I should advise, for helping the waters to work this effect, to dissolve therein at sometimes half a scruple or more of rightly prepared Sugar of Steel, which no doubt would make the water more effectual, for precipitating and carrying away this foresaid *Tartarum solutum*, which otherwise often pertinaciously adheres to the vessels, and proves rebellious to ordinary solutives or purging Medicines; to which purpose some vitrioline waters, especially where a larger portion of the body of Iron is dissolved, is of more

efficacy in this case than, this: which as I said before may easily be helped, by an artificial addition. For commonly in the most obdurate obstructions and Diseases thence depending, this *Sal excrementitium* clings closely to the osculations of the vessels, and is the cause why the Green-Sickness in some young women is so difficult to Cure. Which sometimes bends not to the single help of this or other *Spaws*, where little or no body of a Mineral is found: nor to a *Galenical* method of Bleeding, Purging, &c. but only or chiefly to chalibeate Medicines, and some resolving penetrating Diaphoreticks.

38. In the defects of Critical evacuations in young women, the obstructions may be so great, as to cause an uterine Asthma, Suffocation, Epilepsie, Pallie, &c. Which obstructions being removed by the *Spaws* and chalibeate Medicines, those Diseases because uterine, and depending thereon, are forthwith Cured; to which the change of Air doth not a little contribute, by adding a volatizing ferment to the blood, whereby it becomes more capable of being absolv'd from the tartareous recrement, to circulate the more freely in the vessels.

39. As the *Spaw* water and chalibeate Medicines, have an aperient virtue of resolving the tartareous obstruent: so also they strengthen and constringe the fibrous *Systole* of the Membranous parts, helping them to do their work which before they flagg'd under; hence they are proper for *Diarrhea's*, *Dysenteria's*, *Lienteria's*, *Cæliaca's*, &c. All which proceeding from a coagulation of the foresaid tartareous recrement upon the *fibres* of the Membranous parts, which makes them forget their functions, weakens and loosens the *fibres*, whereby they cannot retain what they should, but carries all off with
a pre-

a preposterous *Diafole*. The *Fibres* of the uterine Membranes are often very well constring'd by the *Spaws*, as I said, and chalibeate Medicines, and reduc'd from being too great prodigals, that before spent their own, and a great part of the stock of the body.

40. But if the uterine Disease rise a note higher, by being graduated from a virulency in the blood; so as thence to cause *Hysterical Fits*, *Syncope's*, *Lypopsychia's*, &c. Then will Medicines of an higher rank be requisite, for the *Spaws* and Chalibeats will not reach them: To which purpose I have seen *Elixir Proprietatis* well Prepared, after a previous proper purgation, operate notably in allaying these uterine furies, mitigating the acrimonious virulency of the blood, and thereby composing the otherwise *furibund Archeal Faber* of the Womb.

41 *Helmont* in these cases commends the volatile tincture of Coral, and the *Arcanum ignis sive dulcedo Sulphuris à Vitriolo Veneris*, which *Ignis Veneris* doth allay the ragings of that furious animal by the anodyne Sulphur thereof; also his *Electrum Minerale*, which is a bright resplendent Mineral *Marcasite* of Gold; also *Asafœtida* and *Castor* and the Oyl of Amber. *Paracelsus* highly extolls the fume of Horse-warts, taken *ex infundibulo per inferiora*; sometimes a draught of cold Spring-water; the smoak of burnt Feathers; also *Amulet*, as *Asafœtida* hung about the neck: which two last save one, with the like of that tribe, do only palliate the Disease.

42. A good *Deopillative* Medicine together with a proper Diaphoretick and sutable *Anodynes* are most requisite in these Diseases; such I mean as may answer the indications thereof, both by aperient, Diaphoretick, and *Nepenthine* Remedies.

A short Description of Malton Spaw.

1. **T**He like Ingredients of the *Scarborough Spaw*, hath also the *Spaw* at *Malton*, and consequently according to all probability the same operation; as to the parity of Mineral Ingredients, will appear, if you put either the powder or solution of Gauls thereto, it presently gives an opacity, first purple, then black; after the manner as the same doth to the *Scarborough* water, or to a solution of Allom stone, into which if Spirit or Oyl of Vitriol be dropt, that water of the *Malton Spaw* as well as the rest will become clear again: If Oyl of Tartar be dropt into the same cleared water, it becomes troubled again, &c.

2. If Oyl of Tartar be dropt into some fresh water of the *Malton Spaw*, it makes a white *Coagulum* or milky separation; dispersed through the whole; if Oyl of Vitriol be dropt into that milk water, it clears it after a little ebullition from the two contrary Salts. The same *Spaw* with the addition of the volatile spirit of Harts-horn, &c. makes a white separation, and with Oyl of Vitriol becomes clear.

3. This water I have distilled in a glass-Retort, with a gentle fire; and after the simple elementary water was come off, there remained a pale-coloured Sediment, much the same with that which remains after the distillation of the *Scarborough Spaw*, viz. an Effluvine aluminous Salt, which passing thorough or by some Mineral Bed of Iron, licks upon it, carries some small touches thereof; and also passing by some Stones in its current, raiseth some small portion thereof, which being wrought off by the Effluvine Salt,

Salt, it hides it with it self in the pores of the water; which is that as remains after the Salt is washed from this Sediment, either simply or after calcination, which hath no taste, nor (after the separation of the Salt) is dissolvable.

4. To enumerate the virtues thereof, were but to repeat what I have said already concerning the *Scarborough Spaw*; and therefore shall wave it, and wish a stronger Spring, with a better current, were endeavoured thereabout, for the good of that part of the Country; in respect it hath but a faint Spring, and would easily be dreyned if many should drink thereat. This water is as deeply saturate with Mineral Principles, and as thoroughly impregnate with Effusive Alumenish Salt, as the other of *Scarborough*, only by reason of the restagnation of the water about the mouth of the Spring, is somewhat more sluggish, and unapt to give its virtue: All which may be mended to the great improvement thereof, if a new Spring were found out.

The Sweet Spaw at Knarsborough.

1. **I** Shall not speak much of this water, because the ingenious Dr. *French* hath writ thereof at large; only shall in short say, That this water hath but a small portion of an Effurine Acidity, which hath a little preyed upon the *Minera* of Iron, got a sleight touch therefrom, and therein is as a Vitriol of the *Minera* of Iron.

2. For if Gauls be put therein, it turns purple, and in the conclusion Inky, upon which if Oyl of Vitriol be dropt, it becomes clear again; and by Oyl of Tartar muddied, and cleared again with Oyl of Vitriol, *Aqua fortis*, &c. But if you pour Oyl of Tartar on some of the fresh water, it gives a white milky separation; which with Oyl of Vitriol becomes, after ebullition, clear again; upon which if Oyl of Tartar, Spirit of Harts-horn, or any volatile Saline Spirit be again poured, it causeth the same white *Coagulum*, reducible to a clarity by fresh addition of the foresaid Oyl of Vitriol, *Aqua fortis*, or the like.

3. All which demonstrate, That Vitrioline Solutions may undergo the same alterations, by the effusions of various Liquors, as Alumenish Solutions will do, and that in effect, as I at large shewed in the former Discourse, are but the same Mineral Effurine Salt, under various disguises from Mineral Beds, where they become speciflicated into this or the other Salt, from the touching upon various Mineral Glebes.

4. So that in effect, all Mineral Springs, whether vitrioline or aluminous, are the same; only some waters are more strongly saturated with Mineral Salts than others: in order to which, we find that

that the *Scarborough* and *Malton* water are better fraught, and more richly laden with its Minerals than this of *Knarsborough*, which is a more poor lean water, thin of Minerals, and therefore greater quantities must be drank.

5. I confess I like the Air of that place much better, being upon an high heathy Common, than that of *Scarborough*, especially for weak and tender bodies; and in the Cure of Chronical Diseases, the choiceness of the Air is of no small value, nay indeed oftentimes *instar omnium*, above all the rest. For the change of the Air, and the aptness and goodness thereof, doth often volatize the sluggish ferment of the blood, which in long continued Chronical Diseases, as the Scurvy, Dropsie, Asthma, Consumption, *Cachexia's*, &c. is become flat, feculent and restagnant in the vessels, through the depravation of the ferment thereof; which causeth the lamp of Life, only to glow in the coal, or *Caput mort* of the blood: whence they commonly, who are afflicted with thoses Diseases, go heavily and sadly.

6. Whereas when the ferment of the blood becomes restored (to which change of Air doth not a little contribute) that it separates the feculencies, volatizeth the mass, and gives wings to that which should transpire, then the blood begins to circulate freely, the Diseases become Cured, and the lamp of Life burns with a bright flame. I say, the change of Air helping to volatize the blood, renders it more capable of receiving some assistance by other Remedies, whether the *Spaw* water or other Specificks.

7. That this *Spaw* is Vitrioline, and that only, is demonstrable by matter of fact, viz. Take a Dram of Vitriol of Iron, otherwise called Salt of Steel, which dissolve in a pint of Spring water; of which

two or three spoonfuls mixed with a glass of fresh Spring water, gives the exact taste of that *Spaw*.

8. I should advise the Drinkers of that *Spaw*, in order to make the waters more effectual in less quantities, to take Salt of Steel dissolv'd therein frequently; which I am confident, would add abundantly to its virtue, and make it more readily answer their expectations. For thereby, first, they need not drink such large quantities, which often overchargeth the digestions; stretcheth the Hypochonders, and burdens nature, to the prejudice of the expected future good; whereas a lesser quantity acuated, with an artificial Vitriol or Salt of Steel, will make its way the more readily, open obstructions more powerfully, constringe the loose flapping membranous parts more easily, and answer all indications more generally.

9. Besides all which, the *Crocus* of the Steel in that Vitriol, when taken into the Stomach &c. would precipitate; upon which the excrementitious Salt or Tartarous recrement, the great obstracter in many Diseases, would be coagulated, and by the peristaltick motion of the Intestines would be carryed off by sledge, giving blackness to the excrements, thereby sweetning the blood and humours.

10. And therefore it is that those Mineral Springs, which are the most impregnate with a natural Vitriol of Iron, are not only reputed but found to be the most successful in Cures, witness the two *German Spaws*, *Pawhont* and *Savenir*, or *Savern*, in which, though Dr. *Heeres* saith, That by distillation he found Rubrick, *Oker* and a little Vitriol, I mean in the *Pawhont*; yet if we shall credit *Helmont* he speaks thus, *Distillari aliquando serio, Savenirium & Pawhontium; & sane non tantum Mineralium catalogum, immo nil quicquam in eis offendi, præter aquam Fontanam*

tanam & Vitriolum ferri, ab aliis ante me scriptoribus neglectum. Now whether of these two is to be credited? I rather think that *Hen. ab Heers* might be mistaken, calling that *Oker*, which is nothing but a sediment of the Mineral Earth of Iron, dissolved by the Essurine acidity, which we see is separable from Vitriol it self, by a bare solution thereof in Spring or common water, in the form of a yellow powder, which he might easily mistake for *Oker*. As for *Ru- brick* I suppose it is nothing else but *Mater ferri*, the body of Iron in the Vitriol; and so it will necessarily follow that what *Helmont* saith, as to matter of fact, is most true, *viz.* That he found by distillation of those waters, nothing save clear water and a Vitriol of Iron.

11. By the *Medium* of which Vitriol of Iron those Springs effected their Cures: Of which also this at *Knarsborough*, if assisted by the help of an artificial Vitriol or Salt of Steel, would prove *succedaneous*; though I confess if it were saturate with the natural Vitriol, it would operate the better. Which, whether natural or artificial, if the water be any thing considerably impregnate therewith, it doth its work in less quantities; the great bulk whereof, usually taken to make it work, stretcheth too much the *Fibers* of the Membranous parts, baffles their *Systole* or contractive motion; whence not being strengthened afterwards by some astringents, they flag, and the Patients sometimes, after they have left drinking the waters, fall into Dropsies, Defluxions of Rheumes, *Cachexia's*, and the like.

12. All which might easily be prevented by taking the Vitriol of Iron or Salt of Steel, in a proportionable quantity dissolv'd in the water; for this astringerth and keepeth up the right tone of the Membranous

branous parts; orderly regulating the *Systole* and *Diastole* thereof; which very thing would be of no small use to many Patients.

13. I should advise before the drinking of the water, a Dose or two of the well prepared Salt of Vitriol, especially to such whose stomachs are furr'd with a tartarous recement, and *viscons* Sediment, fast impacted in the tunics thereof, which the solitary waters might slip over again and again, without any remove, and consequently without any considerable effect; but being once loosened by the strength of an Emetick, might be carryed off the stomach, partly upwards and the rest downwards, washed away by the force of the water.

14. The time of drinking the largest Dose of the waters, acuated with the Salt of Steel, is the Mornings, walking as the usual course is, and no more all the day, except two glasses in the Afternoon about four of the Clock; and that but to some bodies neither, *viz.* to such as by experiment find it go well with them: exercising themselves by Walking, Riding, Reading, Bowling, or any other innocent divertisement; keeping an ordinary Diet of a few dishes, and those of wholesom meat and well cook'd, without too much variety of sauces, which confounds the stomach; not to glut or overcharge the stomach, but to keep an hanke over it.

15. The water thus drunke, together with the addition of some singular Specificks, well ordered, according as the nature of the Disease requires, will probably, *consideratis considerandis*, perform very considerable Cures, to the comfort of the Patient and credit of the Physician; who as such, is a Minister or helper of Nature. As to the particularity of the Diseases themselves, this

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Spaw and other additional helps may be effectual in, I shall refer to what I have already spoke in the former discourse of *Scarborough Spaw*.

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The Sulphur-Well at Knarsborough.

1. **T**Hat this water hath a strong body of *Sal Marine* in it, needs no further evincement than its eminent saltish taste, and the copiousness of a black salt left behind after the distillation, or evaporation of the water; which by solution, filtration and evaporation becomes a clean white *Sal Marine*, no way distinguishable from the Trencher-salt we use; that it hath also a Sulphureous *fætidness*, is apparent enough, both by the smell; and by the strong rifts or belches upon the stomach, somewhat like to *fætid* rotten Eggs.

2. As I was trying an Experiment to another purpose, I found somewhat unexpectedly, which did abundantly satisfy me, as to the cause and reason of this Spring; and it was thus, I took three Ounces of thrice calcin'd Bay Salt, dissolv'd it in about a pint of Well water, which upon the Solution gave a very *fætid* odour, most exactly resembling this Sulphur Well. It was very black in respect of the terrestreity of the Salt that gave that blackness to the otherwise clear water; this I filtred forthwith into a clear liquor; that retain'd the perfect smell and taste of the Sulphur water.

3. Whence I concluded, first, That the *Sal Marine* is not a simple Salt, but a Mineral Concrete, having an embryonate Sulphur close lockt up in its concretion or compage of its body, whereby the *Primum Ens Salium* becomes shut up in it, as well as in other Mineral Salts; and therefore cannot be made to appear, unless that which hinders be taken away, that is, unless the Hydropick moisture wherewith it abounds be exhausted by flagration or decrepitation, and

and the terrestrious feculency, or (as I would rather call it) the embryonated *fætid* Sulphur be removed, which is done by a further, or reiterate calcination or fusion by the fire, whereby its Mineral compage is unloos'd, and so comes nearer its *Primum Ens*, than when it's clothed with Mineral Vestments.

4. For all Mineral Salts, whether Nitre, Allom, Vitriol, or *Sal Marine*, are but the several specified concretions of that *Primum Ens Salium*, the mother of them, as also of other Mineral productions: So that the *Primum Ens* runs through, and is in all those Salts, only receives a particular determination into this or the other Salt, according to the predomination of the properties of the nature and disposition of the place, at time of concretion; inasmuch as that by the addition of a Sulphur, every where (though differently) wrapt up in the bosome of Nature, this *Primum Ens* becomes coagulated and determined into a different Salt, or other concrete body (which yet to a common and unexperienced eye, might easily pass for a simple and uncompounded Salt) the resolution of which requires no less than a skilful Artift.

5. Secondly, I hence also conclude, What may be the constitutive principles of Sulphureous Springs; and that is a *Sal Marine*, so digested in the bowels of the Earth, as that its Mineral embryonated Sulphur becomes unloosed: which together dissolving in the vein of a Spring, passing through the various Meanders or Streiners 'of the Earth, called by *Helmont Sabulum bulliens* or *Quellem*, it becomes purged from much of its terrestrial feculency it had contracted in its solution.

6. By which embryonated Sulphur, I mean a Sulphur *in suis principis*, in its first appearance, whilst it

is yet in the kernel (as I may say) and not brought on so far as to become a real body, but only a volatile Gas, which contains the beginnings and impressions of Sulphur in it, and yet is not imbodyed in a Sulphur, but is as an Embryo before its imbodying in the Womb; from which, its name of an Embryonate Sulphur.

7. And that it is such an embryonated Sulphur, which predominates in these Sulphureous Springs, appears by evaporating some of that water, and you shall find that before half of the moisture be gone it hath lost all its Sulphureous odour; because so volatile as not the least of it discernable in any body of Sulphur or otherwise: nay, though one should distil it with never so much curiosity of exactly fitting and joynting Receivers, yet would nothing of a Sulphur become apparent, but would be gone insensibly; as happened to a solution of above a pound of thrice calcined Salt, which upon the affusion of water did exactly resemble the Sulphur Well, as I said, which filtered and placed over the fire to evaporate, before one half was gone it had lost all its embryonative Sulphur, being so volatile as it took wings, by the assistance of so much heat, and left no footsteps of its presence.

8. Thirdly, I conclude that such a solution of the *Sal Marine*; together with its embryonated Sulphur, in a *sabulous* Spring (having received that previous digestion in the intrails of the Earth, as to make apparent its Embryo Sulphur) may be nearer the *Primum Ens Salium*, then a coagulated Salt; and may be better taken in order to the preparation of that great Solvent, the *Sal circulatum*. And my reason is partly grounded upon a sentence of the grave and long experienced *Helmont*, where he saith, *In Sulphure sunt fermenta, fracedines, odores, sapes specifi-*

cifici seminum ad quasvis transmutationes, that is, In Sulphur are ferments, hogo's, smells, specifick tastes of seeds fit for all transmutations; so that in the bosom of Sulphurs, lyeth the main wheel of all transmutation: the beginnings to which are also putrefactions, which those Embryo-Sulphurs may much promote. For all bodies that are capable of resolution into Heterogeneities, their texture is subverted by the working of ferments upon the Sulphurs of such bodies, whereby they may be readily analyz'd or taken in pieces.

9. Lastly, That Spirits (such I call the *Primum Ens salium*) before they are coagulated upon Minerals or other bodies, are but in *Embryo*, or in their infancy (as I may call it) or nonage; and therefore coagulable upon bodies to the impairing of their own activity, by locking themselves up in the textures of bodies: and so require a resolution from their coagulation, before they can be brought to that purity and simplicity they were in, when they found bodies to dwell in, *viz.* before incorporation.

10. Hence it is that *Paracelsus*, giving an hint concerning the preparation of his grand Liquor *Alkahest* (which I do not remember he calls by that name in all his Writings, save *De Viribus Memborum. Cap. De Hepate*, but by *Sal circulatum, Primum Ens salium, &c.*) saith, *à coagulatione resolvatur & iterum coaguletur in formam transmutatam*; that is (as I apprehend) That seeing we can scarcely find the *Primum Ens salium* in its pure spirituality, and naked simplicity, but as it is infolded in the arms of a Mineral body, and so coagulated into many shapes of Salts, as Marine, Vitriol, Allom, Nitre, &c. which are several bodies, wherein this hidden Spirit or universal embryonative Solvent, appears to our view

in divers corporeal dressees, putting on (*Proteus* like) new shapes according to the Mineral vestment, wherewith he is cloathed, requires therefore (if we would have him appear unmasked) to be resolv'd from his coagulation; till then we cannot expect him capable of performing much in the way of a penetrating Master-Solvent, but acts according to the freedom of his keepers.

11. And though this Spirit or *Primum Ens salinum*, while it is in its infancy or *embryo*, be so weak as to clasp hold of every body that comes near it, and prostitute it self to every woer, in many strange Mineral bodies; so as to dilibitate it self before it arrive to those more mature and masculine functions of penetrating and dissolving bodies, without being contaminated with their touches, or debilitated and baffled by their re-action: I say notwithstanding this weakness of the Spirit before coagulation; yet if after the resolution, it becomes set at liberty from its bonds, divorced from its first consort, and then exalted and fortified in its own purity by a gradual process, becomes so noble and virile a liquor, as that it acts upon all Mineral, Animal and Vegetable Concretes, dissolving them into their *Primum ens* or seminal *Craffis*, whereby their medicinal virtues are at hand; and that without the least re-actions of those bodies upon this universal Solvent Liquor. But to return.

12. This *Spaw* as to medicinal use is not of much more efficacy than so much Trencher-salt, dissolved in such a proportion of water, answerable to that of the Sulphur-Well, which both alike would much-what have the same operation; only the *fætid* embryonate Sulphur doth somewhat provoke nature, and therefore extimulate the expulsive faculty of the stomach, purging either upward or (which the rather) downward.

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13. The plenty of the Salt wherewith it is strongly saturate, preserves much against Putrefaction and Diseases thence proceeding, viz. against worms, and wormatick corrupt matter in the stomach and intestines, which so much common Salt as I said dissolv'd in fair water would effect the same. The blackish Salt which remains after the boyling up of the water, hath no more virtue against worms (for which it is frequently used) than a like quantity of common Salt; for it hath no specifical difference from common Salt, especially when depurated by solution, filtration and evaporation: then it is exactly the same.

14. And though there be a *Marcasite* or stone of Vitriol to be found about Sixscore yards from this Well, which will fall in the Air in a moist place; and by solution, filtration, and evaporation, will become a transparent green Vitriol, as an ingenuous Friend of mine for tryal sake made: I say though this be found near it, yet doth not in the least partake thereof, neither in taste nor virtue.

Concerning the Original of Hot Springs.

IT is not the least amongst Chymical Enquiries, to know the true original cause of heat, whether in Vegetables, Animals or Minerals; amongst which, the cause of hot Springs, is not inconsiderable, seeing that in them are found many medicinal virtues, useful for the help of Man.

Where I shall proceed, first to shew, That hot Springs or Baths are from Mineral Salts; next, How Mineral Salts upon the contact of one another, or of Mineral bodies, are the efficient causes of heat in those Springs; and thirdly, How artificial Baths may be made analogical in virtue and operation to the natural; and Lastly shall shew the efficacy of hot Springs and Baths, whether natural or artificial.

As to the first, That hot Springs or Baths are from Mineral Salts, is evident, because no Mineral or Metalline body, is dissolvable or alterable in the bowels of the earth, without the concurrence of Salts; for in the Mineral and Metalline Kingdom there are but two Agents, which makes the great alterations amongst those bodies, and those are Fire and Salts. by Fire, I mean not only the external and elementary fire, by whose force Metals and Minerals become separated from their connate Heterogeneities, and brought to the best; but also the inward inbred fire, viz. the Sulphur of those bodies which ripens and maturates the Minerals and Metals, making them more or less pure, according to the disposition of the place and graduation of the Sulphur.

By Salts I mean the *Primum Ens salium*, with its various coagulations into specified Salts; for without these Agents, all Mineral and Metalline bodies are

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at rest. There are neither solutions nor coagulations.

Now there are few sorts of earth through which water in its current passeth (saving the *Quellen* or *Arena bulliens*) but they are impregnate with Mineral juyces, of one sort or other, which by some sleight touch of a Mineral Salt in the water-Spring, becomes dissolv'd in some small proportion, enough to give that great difference we find in Spring-water, both as to taste (which some that have accurate palates, and have accustomed themselves to drink water, can easily discern an eminent difference, in taste of one sort of Spring-water from another) as also to the frequent use waters are put to, both for boyling meat, washing and bleaching cloaths, Dying, Tanning, Brewing, &c. All which difference I say proceed some small solution of different Mineral juyces, by the *Medium* of a little touch of Salt, dissolv'd in the subterranean chanel of water. Here I might expatiate and shew the reasons of the difference of waters, both as to taste, and also in order to the foresaid uses; but least I make these papers swell too much I shall wave it.

My next work is to shew, How Mineral Salts upon the mutual contact of each other, or of Mineral bodies, are the efficient cause of heat in those Springs I am now speaking of. To which purpose, I shall propound severall mechanical experiments of the productions of heat; as first from the mixing acid and alkalizate Liquors, as for instance of Oyl of Vitriol, with Oyl of Tartar, which upon mixing give a great heat, making a strong ebullition, which when over, the heat wasteth; and that is either when the one by its greater proportion, over-acts or overcomes the other: or when both proportionable, they are reduc'd to an *Equilibrium* or neutral Salt, called *Tartarum Vitriolatum*. Which heat is caus'd not only by Oyl of Vi-

tritol upon the *Alkali* of Tartar ; but also by any other acid Spirit, as Spirit of Nitre, Spirit of Salt, *Aqua fortis*, Spirit of Vinegar or the like, which after the ebullition is over, give a *Tartarum nitrosum*, *salinum*, *acetosum*, &c.

And as Salts, mutually acting upon each other, cause heat ; so in like manner do some Liquors or Spirits, affus'd upon Salts effect the same, as Spirit of Wine poured upon drie Salt of Tartar, will make a great heat, so that in mixing them, to rectifie Spirit of Wine therefrom, we usually do it *per vices* or by sprinkling the Salt leisurely therein, least we should indanger the glasse by heating it too much. The like heat happens by pouring the Spirit of Wine upon Arsenick fixt upon Nitre; which as from the same cause, with that of Spirit of Wine upon Salt of Tartar ; for the Nitre by the open calcination with Arsenick, is partly turned into a fixed *Alkali* : which that it is so, appears, because if to the dulcified Arsenical powder (after the washing away the Salts) Spirit of Wine be poured, no heat is contracted. So water poured upon *Calx viva*, gives a considerable heat, which it doth by resolving the acid and alkalizate Salts contained therein ; who by their mutual contest cause an heat.

As Salts acting one upon another, and the affusion of some Liquors also upon them, cause heat ; so also Salts acting upon Minerals or Metalline bodies by corrosion and dissolution, are the efficientes of heat. Thus any corrosive *Menstruum*, fretting Mineral, or Metalline bodies cause the same ; as for instance, in the solution of any Metal in *Aqua fortis*, during the ebullition there is an heat : so in making the *Vitriolum Martis*, upon the affusion of the *Menstruum*, the heat is so very strong, as that I have not been able to hold

hold the glass in my hand. Which proceeds from the agile Spirits of Salts, fretting upon the Metalline compage, taking it in pieces, and reducing it in *minima*; in whose forcible (not natural) *Analysis*, through the agility of motion the heat is caused.

But in the pouring *Aqua Regia* upon Antimony or Spirit of Nitre, upon *Butyrum Antimonii* for the making *Bezoardicum Minerale*, there an heat is caused by an actual humid calcination of the Sulphur of that Mineral; where the Sulphur by those corrosive Spirits, almost takes flame, passeth off with a strong stifling Arsenical vapour.

Also the motion of bodies, one upon or against another, by concussion or friction, cause heat; so fermentation gives quickness of motion, and that produceth heat: which is sensibly perceived in some fermenting liquors, in others not.

Now the Query pertinent to my purpose is, Which of all these several causes of heats, may probably be the efficient of hot Springs? To which I answer, That it is most likely to proceed from Mineral Salts, one acting upon another; that is, from the Effurine Salt (which alone with a slight touch of a Mineral, give being to those *Fontes Acidi*, viz. Vitrioline *Spaws*) which meeting in the chanel of the Earth with some lixivial *Marcasites*, are by the current of a water-Spring dissolv'd and set a boyling; one working and fretting upon another, give that heat to the water, which dissolves them. Which two Salts, viz. Acid and Alkalizate, are sometimes embryonative in the same *Marcasite*, which may happen in some natural stone or middle Mineral of *Calx Vive*; into which a current of water being opened, presently dissolves the two Salts, makes them contest and struggle, by reason of the antipathy of their

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natures; and thereby cause the heat in hot Baths.

So that in short, It is very probable that it is from a natural stone of *Calx Vive*; which being plentiful in the *Minera* thereof, may give cause for the perpetuation of heat. To confirm which, Some have found a white *Marcasite* about the place of those hot Springs in *Somersetshire*, which put into water gives an heat. Now that two such opposite Salts should be embryonate in the same Mineral stone, is an argument, that the seminal principles of Nature are at work in all places, according to the capacity and manner of the matters reception, viz. *ad modum recipientis*.

Calx Vive distill'd with fresh Urine, makes the Spirit thereof arise at the first, with that difference also from solitary Spirit of Urine, as that it gives cause to think, that some volatile *Alkali* of the *Calx* ariseth up with it, which hinders the coagulation of the Spirit into an *Offa* with Spirit of Wine, usually happening from simple Spirit of Urine, and Spirit of Wine mixed together. Which very thing argues the difference of Salts of *Calx Vive*; That it hath an *Alkali* in it, is demonstrable enough from its enriching of grounds; for which purpose it is frequently used in barren Soyls, which the Country-man chuseth for some grounds, rather than Manure. That there is an acid Salt therein, is somewhat distinguishable by the taste.

Another sort of heat I have observed to proceed from the contact of Salts, and the *Calx* of Metals; as for instance in the following experiment, I took of the *Caput mort*, of *Viride Eris*, from whence the *Spiritus Veneris* had been rectified, being a very subtile *Calx* of *Venus*, with which I mixed an Anatical proportion of *Sal Armoniack* pulverized very well
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in a large brass Mortar ; in mixing, it came to such an impalpable powder, as the particles seemed to be as minute, and almost as continuous as the particles of water are, for it was almost as fluid as water : so that (by the by) it is plain, minuteness and adaption of parts amongst themselves are mainly, if not solely, conducive to fluidity ; and fluidity the essential property of water.

When I had well incorporated them together, for so they should be ; in as much as when any futable body or Spirit, is to penetrate and work an alteration in another body, they then do it best when they touch each other *per minima* : thence Contritions and Sublimations are the *Pistilla Chymica*, by which alterations are made of one body by another. I say, when I had well incorporated them, I put them into a paper, thinking the next day to have put them into a Retort ; but within less than one quarter of an hour I perceived such a strong penetrating urinous smell, as made me admire whence it should proceed, which put me in fear of some glass being broke in my *Bal-neum*. At length I came near the paper, and presently found it to be that which sent forth such a strong odour ; which when I took up off the Table, was so hot as I could scarce suffer to hold it. I made hast to put it into a Retort, which before I could do, it well-nigh burnt my hand.

By this experiment thus far, Two things considerable appeared ; one, conducing to illustrate, as I said, the nature of fluidity to consist in minuteness of parts ; the other is, That heat (and so consequently the rest of the qualities so call'd) are a certain disposition and adaption of parts of bodies amongst themselves after such and such a manner, as to work differently upon one and the same body :
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so that a brisk motion of the constituent particles, either by an innate fermentation or extrinsick excitation from another subtil body, is sufficient to cause that we call heat.

Some other causes there are of hot Springs, viz. Subterranean Fires, set on work by the flagration of *Bitumen* or Sulphur; which being kindled in some parts of the Earth, where being close pent up, not finding vent, causeth Earthquakes: but when it breaks forth, it sometimes forceth with that violence, as that if it break forth under the Sea, it throws up stones and earth in such abundance, as that a new Island is thrown up of a suddain in the midst of the Sea; and that for many Leagues together, the Sea is at that time covered over with the spongy Pumice-stone, which is the *Caput mort* in the flagration of that Mineral. Other places there are by which, as Chimneys or Flewes, the Subterranean Fire finds vent, as *Ætna*, *Vesuvius*, *Strongilo*, *Vulcano*, &c.

These Subterranean Fires, the ingenious Kircker in his *Mundus Subterraneus* calls *Pyrophyllacia*, which being conveyed by several Subterranean Pipes or Channells to those Cisterns or receptacles of water called *Hydrophyllacia*, which thereby become heated, and that in places not far from day, I mean the superficies of the Earth, breaks forth in hot Springs. These *Pyrophyllacia* it is very probable are the cause of some hot Springs, as the kindling of *Calx Vive* are of others. Of which last *Fallopins* tells us, *In agro Volaterrano ad castellum montis Cerbari vocatum, sunt lacus dicti vulgo, lagoni, quasi lacuna, ubi est aqua ferventissima, & undique cinis; quinimo & mons qui ibidem est, totus calce & cinere refertus est calido, adeo ut calceamenta exurat, ut ipse sum (inquit) aliquando expertus.* These *Pyrophyllacia* heat

heat the waters, sometimes in *ipsis cuniculis*; other- while they heat Mineral stones through which water passeth: either way make hot Springs.

Thus having numbred up the several sorts of heats, and amongst them pitched upon that which is the efficient of hot Springs; amongst which also (by the by) the preparation of the body of Steel is performed; whereby it will the most part of it readily dissolve in any Vehicle, and make a Mineral water like *Tunbridge, Epsom* and *Knarsborough Spaw*; Let us now consider how artificial Baths may be made; and those are either such as are more common, as the decoctions of Vegetables and Salts in water and other liquors, wherein Diseased Persons are frequently put, also to have the body (all but the head) inclos'd within the steams of hot water, or to sit under a frame of Pastboard with Spirit of Wine flaming in a large Lamp-vessel, which is a kind of Stoving Bath or Stoves, &c. or such Baths as are more rare, *viz.* Spirit of Wine with Salt of Tartar, either for some particular parts of the body, or for the whole, if some Patients upon extraordinary occasions would go to the charge thereof; also Sulphur so artificially contriv'd, as that the flame thereof shall heat a large vessel of water, in imitation of the terrestrial fires, wherewith some Baths or Springs are made hot: which Bath might constantly be kept hot by the continual supply of fresh Sulphur, in manner of the Fountain which the *Romans* made constantly by art to flow hot; which was performed by some brass Pipes wound up in Gyres, *Inspiras voluti instar Draconis*, which were therefore called *Dracones*, under which they made a fire, by which the first Spires were made warm, the next more, the next again yet hotter, so that the water did continually
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flow forth hot. After which sort with some little variation, Physicians might keep hot baths with Medicinal waters, suited for the Patients Disease, constantly at work with a small charge, after the vessels were once artificially contriv'd. To which purpose I have had a *Balneum Mariae* kept hot for digestions, by Leaden Pipes placed in Gyres in a wooden vessel.

The advantage of such artificial contriv'd Baths, is this, That the Physician may presently change his medicated waters, as occasion offers, can give what degree of warmth he pleaseth, and keep them constantly in an equal heat, which cannot easily be performed by the common sort of Baths; and therefore comes nearer in efficacy to the natural hot Springs than the other, and so consequently more effectual.

Now as to the virtues of Baths natural or artificial, they are of large extent, and may be, if skillfully managed, of much use in helping many Diseases, as the Palsie, Convulsions, &c. Which by opening the pores, and thereby removing the obstructing or afflicting causes of the *Genus Nervosum*, may probably be successful in all the Diseases thereof; also the Hypochondriack Melancholy, by opening the external portals, alieviating of the Spirits, giving vent for the *flatus*, and with the help of inward aperients, may dulcifie the blood and humours from their feculent tartness, whereby the cohobations and depurations of the blood, upon its *Caput mort* or rejection of its *feces* in its passage through the Spleen, may succeed the better.

Also may be effectual in *Atrophies*, *Aridura*, Witheredness of the parts, by helping a fresh fermentation of the blood, which may force its passage into the otherwise deserted parts; and thereby become

come capable of distributing an equal nourishment to all parts.

Likewise Baths are of efficacy in all sorts of Stiffness, Pains, Numbness and Lameness of the Joynts, by opening the pores of the body, absolving the Nerves from their obstruents, dinting the acrimonious sharpness of the *Latex*, giving current to the blood; and at length reducing the nervous and membranous parts to their due and proper order and tone: Also in other Diseases, as Rickets in Children, Ulcers, Tumors, and Defecations of the skin in elder People; towards the effecting of which, no small variety of the Chymical *Apparatus* or Mineral Drugs, are *in promptu* for that purpose.

A Short Vindication of Chymical Physick.

1. **T**He strange uncouthness of Chymical Physick, is such; yea the very name of Chymistry hath been so much a stranger in these Northern parts of *England*; that, what through the *Odium* cast upon it by the *Galenists*, on purpose to keep it under hatches; and what through the empty, fruitless, boasting pretenders thereto, who not being Artists were its onely disparagers: By both which it hath suffered severely, in the ears of the generality of People, in so much that when they have heard of it, they have stood amaz'd. To venture the taking of any Medicine preparable thereby, they durst not. Why? What was the matter? They knew not, only they had heard strange reports, which frighted them. Their Physicians told them, *They were hot things, such as would burn their bowels; and therefore very dangerous.*

2. Yea, till within this ten or a dozen years, this Noble Science hath undergone much ignominy, or else mostwath unknown in most parts of *England*; yes and in Forreign Parts too, unless here and there one, who if he practiced by it did it privately: so that he who hath bent his endeavours that way, to find out more effectual Remedies by the *Spagyric* Art, hath been lookt upon in these, as a Mathematician was in former days, who by the ignorant vulgar was esteemed no better than a Conjuror; so that a Mathematician and a Conjuror were accounted in the vulgar Idiom *Synonima's*, words of the same signification. For if they dealt with Circles it was enough; they knew no difference between a Mathematical Circle

Circle and demonstrations drawn therefrom (which still was as strange to them) and a Conjuring Circle; like as a boy was once accused before a Magistrate for being a Fortune-Teller or Astrologer. It happened he had a little book in his pocket, wherein was some Schemes I suppose drawn by the help of *Lillie's* Introduction; which no sooner did the Justice espy, but crys out, *Circles, Circles, Sirrah these are dangerous things, we'll take a course with you*: and so ordered the boy to be carryed away. By which you may surely conclude, that himself was no Conjurer, for he lov'd no Circles. Thus poor Circles and Chymistry hath been deeply accus'd.

3. It is not long since the genius of some pregnant wits began to set to work to understand and rightly prepare Chymical Remedies; first, Duely considering the nature of Ferments; and next, To search after the various Solvents, and their manner of operation, without which nothing very considerable is preparable in Chymical Phylick: so that very good improvement of late hath been made therein, witness the elaborate Pieces of some ingenious Persons.

4. We shall therefore, first, say what the *Spagyric* Art or Chymical Science is; next, endeavour to take off the reproach or calumny laid thereon, by answering the objections against it; and lastly, signify the great help nature hath thereby, above ordinary Shop-preparations, in order to the Cure of Diseases.

5. First, as to what it is. It is, in short, such a due Preparation of all Medicinal Concretes, whether Animal, Vegetable or Mineral, as the pure balsamick lively parts becomes separated from the impure feculencies; for we see that in all Concretes there
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is a mixture of pure and impure, of gross and tedious parts; some feculent and dreggy; others refined and depurated, though indeed the mixture of these together makes up a complete body, which hath its use and place in the creation: yet, as to Medicinable use, it's the pure, nimble, spiritous parts of Vegetables or Animals; or the depurated fixt parts; or lastly, the reunion of both after purification, which effects the work, in assisting nature against the Malady.

6. Which Preparations are performed two ways, viz. either by digestion, or by distillation; under that of digestion is comprehended fermentation, solution, extraction and putrefaction, and that by agile Solvents; connatural with or emergent from the bodies of the Concretes themselves, or by additional *Menstruums*: all which doth macerate, ferment and dissolve the texture of the body, and fits it for separation by distillation. The additional *Menstruums* for extractions, are either vinous, oleaginous, urinous or acetous Spirits; or a product from their commixtures: all which do prepare towards the separation of the *Crafs* of the Concrete.

7. All Vegetables or Animals, or at least the most, by bare distillation yield a Phlegm, a volatile Salt, an Oyl, and in the *Caput mort* a fixt Salt, separable from the remaining uselefs *Faces*; but by a previous fermentation; if the juyces of Vegetables, they first yield a vinous Spirit, then a Phlegm, leaving their Tartar behind, out of which by distillation with a stronger fire, is got a Phlegm, an acid Spirit, an Oyl, out of whole *Faces* again is a fixt Salt, separable: but if the Vegetable undergo a more natural spontaneous fermentation, then that, which otherwise is an Oyl, separates it self by distillation, most what in

in a volatile Spirit, or volatile Salt. All sorts of Wood or Plants, by naked force of fire are distillable into an acid Spirit, Phlegm, Oyl and Salt; as we see in burning of Wood, by the bare fire, the Chimneys become the Receivers to which the Soot cleaves: and that again distill'd, yields a Phlegm, an Oyl, and a volatile Salt, which last, by rectification becomes pure and of a lovely white colour. A very penetrative Medicine, useful in Diseases of the *Genus nervosum*; also a great preservative against Putrefaction and Feavers thence ensuing. But I dare not prosecute particulars, least I swell the volume too much.

8. But in general all Vegetable separations of the pure from the impure, are made, as I said, by digestions and distillations, the two main hinges of Chymical Preparations, by which their Spirits and Essences become separated, which united with the extracted fixed Salt out of the *Caput mort* and further digested together, especially if the fixt Salt be made so as to dissolve in most rectified Spirit of Wine, give most noble abstersive and diuretick Salts; Whose virtues, in my Practice, I have much admired.

9. Not that I deny the great blessing of the Most High, in those specifical endowments he hath pleased to enrich some Vegetables and other Concretes withal; who perform their work to which by a Divine Hand they are destin'd, and that without any Chymical Preparation: And yet some Specificks are not altogether without some previous Preparations. An error in the due observation of which, many times prevents or intercepts the full efficacy of the Remedy.

10. There are it may be about a Score of choice Plants; which well managed with a skillful hand at

due seasons, may by their singular virtues, produce considerable effects; the rest are not (that we know) of much use, saving for ornament, pleasant smells, and food to Cattle. What heaps of Plants by some Physicians are ordered to stuff Diet-bags withal? whereas a few choice good ones might probably be more effectual. Some Physicians being call'd to consult about a Patient, who ordering a Diet-bag for him, having put in a sufficient number of Plants, yet some of them would have heap'd in more; one wiser than the rest, very merrily bid them put in a Hay-cock, and then to be sure they would have enough. And indeed it would have proved a very good Magistery for an Horse.

II. As for Animals, or the parts of Animals, preparable by the Chymical Art for the use of Man, are chiefly the Blood and Urine; the first of which, viz. the Blood, is as an *Elixir* of all the parts of the body, where if any Spirits, Life or Vigour be, it's there; the other, viz. the Urine, is a *Latex* percolated through the Reins from the Blood, and retains in it self much of the very same principles the Blood hath in it: so that both unfermented without any previous preparation, only by bare distillation yields first a Phlegm, and that in a great quantity, then a volatile Spirit and Oyl, and volatile Salt; and in the *Caput mort* of both, is some fixt Salt, somewhat resembling Sea-Salt, if not really the same, separable by solution from the remaining *sordes*. But if both undergoe a previous fermentation, then the volatile Spirits becomes loosened from their bonds, and works themselves at liberty; and that whether in close or open vessels: So that then distilled, yield at the very first, with a gentle fire, their volatile Spirits, and the Phlegm after.

12. So that fermentation inverts the order of the parts, coming off by distillation; and that whether in vinous or urinous liquors (by urinous, I also include the blood) For take the juyce of the Grape, or of any vegetable fruit, whether Apples, Pears, Cherries, or the like, distill them, and you shall at the first have nothing but a great quantity of phlegm, and at last a small portion of the true genuine Spirit, together with a fetid Oyl: even as is got (though with some difference of Spirit) from blood and urine distilled crudely.

13. But if you ferment the juyce of Grapes, Apples, Pears, Cherries, or the like, then is the vinous Spirit set at liberty from the bonds of the compage of the body; and in distillation with a gentle heat, comes up first, and the phlegm after; and that which was an Oyl before, is, partly by the volatizing ferment transmuted into Spirit; and partly by refining in the vessels, after fermentation, is settled to the sides thereof in form of Tartar, which distill'd with a stronger fire, gives, amongst other distillables, that fetid empyreumatick Oyl which we see it yields in plenty.

14. So that I say, Fermentation makes no small alteration, whether in vegetable, or animal juyces, by setting the true genuine Spirit, whether vinous or urinous, at liberty, from the fetters of the body thereof; which juyces, if neither distill'd, nor fermented, degenerate into acid, sowre, vinegarish Liquors, which if not kept from the Air by close stopt vessels, will very shortly contract a mouldiness, and decay into vapid uselesse Liquors: even so also the blood in its own vessels, if not volatized from its connatural ferment, becomes sowrish, degenerates into a vinegar, or rather blood in Chronical diseases, and by a further impoverishment of Spirits, becomes at length vapid, whence death.

15. And as blood and urine are Animal parts, which receive also a separation of their heterogeneous parts by distillation; and that differently, by being fermented, or not: so also Harts-horn may well be accounted another, whose parts are separable by the Chymical Art, and if well prepared, are of much efficacy. I speak the rather of the Horns of that Creature, because no other that I know of, renews his Horns yearly, as the Stag doth; which being vegetable, as well as animal (I mean the Horns) gives no small hopes of (yea, we know gives) a good Medicine.

16. This Creature, when fresh Grass cometh in the Spring, begins to have an efflorescence in his blood, which becomes turgent with volatile active spirits; and having more then can well be dispensed with in the vessels, begins from a natural instinct peculiar to that Creature to attempt a new production, by laying a foundation of new Horns: which increaseth by the yet more turgidness of the blood with those volatile Spirits, 'till' conclusion part of which volatile Spirits, together with some succulent parts of the blood, become animated into little vermicles, by an incipient putrefaction, which begets a pruriency or Itching in the blood, and that makes the Stag run his Horns against every thing in his way, and never quiet till he hath knock't the old Horns off.

17. And that is the reason Harts-horn, above all other Horns, is so replete with volatile Spirits; which how to separate, requires the help of the Chymical Art. Its not by reducing it into Gelly, by boiling it in water, that's not enough; for in Gellies of Harts-horn, such as is made usually for weak persons in Fevers, Consumptions, or other lingering Distempers, the volatile Spirit wherein the real efficacy consists, is
not

not at all set at liberty : but so closely hedg'd in with other parts in the compage, that Nature can find very little benefit therefrom. So that as a Gelly I look upon it as no better, than any other Gelly from knuckles of Veal or the like; for all flesh and horns by boyling in water are reducible into Broth: and that by further boyling into Gelly. Which is indeed a good Kitchin-Preparation of meat for weak stomachs: but as to matter of Medicine yields very small or none.

18. So that if we would share with its virtue, which lodgeth in its volatile Spirit or Salt, we must distill it, which may be well done in a glass Retort; and by degrees of fire, it yields first a Phlegm; then by a stronger fire, a Spirit; and at last an Oyl, and volatile Salt. These separated and purified by reiterate rectification, gives the pure, nimble, volatile Spirit or Salt of Harts-horn, very proper in Fevers, both to help the ferment of the stomach, as also to absterse the sanguineous vessels, and to carry off a spurious tainted *Latex*, from the blood by transpiration; also proper for Colical-gripings and other pains from sharp fretting humors in other parts of the body: only it is not very palatable, which makes some disgust it, before they receive the expected benefit by it.

19. But how to make this volatile Spirit or Essence of Harts-horn come over the helm before the Phlegm; and that with a gentle heat, whereby it may be capable of insinuating the better, and more naturally into our digestions, that is, I say, the difficulty, because it wants such a copious moisture as Blood and Urine hath, by which they easily ferment, and give their Spirit first: but this is an hard drye solid body, and exposed never so long to the Air will nor resolve or ferment.

20. To which purpose there is a way, which now occurs to my mind, though I must confess I never tryed it, because it is the first time I thought of it, which though conjectural yet very probable; and it is thus. Take the simple Gelly of Harts-horn, put a competent quantity thereof in a *Matrass*, lute it exactly, set it in the heat of Horse dung or *Balneo* to putrefie, for Twenty or Thirty days; then put it a Retort or glass-body and head, distill: which very probably will yield its pure volatile essence with a gentle heat before the Phlegm, because its volatile parts by fermentation will become extricated from the other more sluggish constitutive parts.

21. As in Vegetables and Animals, so likewise in Minerals, the Chymical Art is no less requisite; for all Mineral Salts, middle Minerals or *Marcasites*, and Metals, are all either so crude, lockt up, or actually poysonous, as that without the help of the *Pyrotechnical* Art in opening, maturing, and correcting by the fire, they deny us that innate hidden virtue, granted to them by God for the help of Mankind. Mineral Salts unless they be distill'd or sublim'd (with other additionals) they communicate little of their operative virtue to us; whereas by fermentation, putrefaction or distillation, they prove noble Solvents for Mineral and Metalline Solutions. Middle Minerals, as Antimony, the *Marcasite* or Mineral stone of Vitriol, *Bismuth*, &c. have such venomous properties, that unless corrected by the power of fire and good Solvents, they do not only deny us the noble medicinal virtues, those native endowments, but actually impress their virulency, upon our vital principles.

22. Whereas if rightly prepared by the fire and proper Solvents, correcting their virulency by mortifying

tifying and separating their malignant, Arsenical, combustible Sulphurs, and thereby setting at liberty their genuine inbred medicinable *Arcana's*, becomes noble Medicines for all curable Diseases. All which is done by fire, or by that which is equivalent thereto (nay sometimes more powerful than fire) *viz.* Solvents, which if rightly made, are only liquid fires, or *Ignis Aqua*, by which Mineral bodies are calcin'd *in humido*, as by an actual fire *in sicco*.

23. Also all Metals if not wrought upon by proper Solvents, are lockt up, as to communicating their virtues, and therefore need particular Solvents to open their bodies; which if rightly done must be brought into an Oyl, of the colour of the Sulphur of the Metal, which are the *Hematina Metallorum Paracelsi*, irreducible to their *pristine* Metalline form, Whence the true *Aurum & Argentum potabile, &c.*

24. Thus you see in short, How necessary the Chymical Art is, to the unfolding of the various Concretes, whether Vegetables, Animals, or Minerals: How by that noble separating Art, we learn to take things in pieces, to resolve them by a genuine natural *Analysis* into their native principles, to separate superfluities, to reunite the volatile parts with the fixt, and thereby produce generous essences; and all this without any great force of fire, except in those bodies whose compage is more firm, and bends not to gentle ways of resolution. Such bodies we examine with a stronger fire, till they yield and at length confess their natures.

25. Now I shall answer what the *Galenists* are ready to object against this Art. First, they say Chymical Remedies are dangerous because they are hot. Where in the first place, they do *petere principium*, supposing all such preparable Remedies to be

hot ; which yet we deny , according to the vulgar acceptance of heat , *viz.* such as is actually so to the palate , witness *Antimonium Diaphor. Bezoardicum Minerale* , *Cinnabar* of Antimony , &c. None of which are actually hot to the taste.

26. But we will suppose with them , that they are actually hot in taste and operation ; and let us see what inconvenience will thence follow. First , we find it certainly true , that cold is the greatest enemy to life , and to vital heat the product of life ; and therefore above all things care is taken against unseasonable cold. Why do we wrap our bodies and make our houses as warm as we can against the injury of the cold ? Why have we our meat every day , yea in Summer (excepting those who are not able to go to the charge) provided warm for our stomachs ? Why do we take our broths as hot as we can sup them ? Is it not to help the fostering and cherishing our vital heat , and to preserve the digestions intire against the grand enemy of nature , cold ? Which is not a meer negative and privative quality of heat , but is a real positive *Ens* or actual being ; and therefore abhorr'd of nature , which she shuns and flies as the Harbinger of Death.

27. You will say then , If cold be so great an enemy and so dangerous to the vital heat , How comes Feverish Persons so much to desire cold things , *viz.* cold drinks , or any cold thing to hold in their hand , or cold part of the bed to reach their feet to ? I answer , That they only desire cold things through a depravation of their senses and appetite , which now not being competent judges , requires things at random. It's a meer juggle upon the senses and appetite , being impos'd upon by the irregularities of the Fever ; for first the *adust Alkalizant* recrement re-united in
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the tunicles of the Stomach of a Feverish Person, begets that unquenchable thirst, and unsatisfied desire after cold drink: which thirst that it is erroneous and deceitful appears, because if great quantity of cold drinks be poured down, yet the thirst remains; whence, through the depravation of the ferment, the appetite also becomes depraved. The ground of the deceitfulness of the sense of Feeling, I presume, proceeds from some *sordes*, which also are impacted upon the sides of the vessels of the blood, together with some Heterogeneities in the mass of blood, which Nature endeavouring to absterse and separate, rowseth up a strong fermentation in the vessels of the blood; and the more the recremental Tartar, is fastened to the sides of the tunicles of those vessels; and the more the Heterogeneities are, the stronger is the *Nisus*, or endeavour to separate them; and consequently the greater is the sensible heat, which thereby perverting the sense, makes it irregular in its pressing after cold things.

28. That the coveting of cold drink and cold things in Fevers, is (as I said) a deception of the sense, and a depravation of the appetite, further appears; because notwithstanding the inordinate desire of cold things, yet if by any cold drink taken into the stomach, or by any accidental uncovering of the body, the *Archus* or Regent Spirit of any part, becomes offended at its antagonist, the cold, the Fever or other Distemper doth certainly encrease, the spurious fermentation of the blood becomes stronger, and consequently the Feverish heat (which is the constant product thereof) is more violent, and all symptoms grow worse: And all this because cold (the great enemy of vital heat) makes its onset upon the vital principles unawares, through some incautious accident,

accident, or designedly, through the depravedness of the appetite, which is bent to require that which is harmful to it, yea of which even in the very taking, it becomes convinc'd of its folly, by finding it doth not answer its expectation, *viz.* the quenching its thirst.

29. That cold is a real positive quiddity, something really existent in nature, and not a meer negative of heat (as some would suppose) which, if so, would in effect be nothing: but vital heat and mortal cold, stand both positives, counter, one opposing another, is, I say, demonstrable by matter of fact. In cold Countries, in *New-England, Freezeland, Swethland, Russia*, where in the Winter time, the cold is actually so intense, as that if they do not by some artifice defend themselves from the rigour thereof, it will freeze off their very Noses; yea their fingers will become mortified, if they are too much exposed to the injury of the cold. But we need not go so far; for we see in our own Country in the Winter time in strong Frosts that some parts become mortified; for instance, About three Years ago, a man was drunk at a Country Town, and in returning home his partner left him upon a Bridge, where expos'd to the cold frost upon the hard stones, he had his lodging that night; the next morning he was found alive, but his hands and feet (the most remote parts from the fort of vital heat, the heart) were absolutely mortified, grew black as Pitch, and never reducible to life or vital heat again, and therefore were cut off. It's very probable if the man had not been drunk, the cold would absolutely have kill'd him; but the Spirits of the Liquor fortified the vital Spirits against the total subversion thereof by cold.

30. And not only upon Animals but also upon Vegetables

Vegetables Cold exerciseth its tyranny. How are tender Plants in the Spring nipt with cold frost? How do they flag and as it were hang the wing after a sharp cold morning? Nay, How actually are the blossoms of fruit-Trees mortified and kill'd by frosts, the grass nipt and kept back from growing? And all this by the mortal enemy Cold. That it is not a meer privation of heat, appears further, because though the Sun be got into *Taurus* or *Gemini*, and thereby is in great force and very vigorous; yet we see that frosts come in *May*, and prove then mortal to many tender Plants: yea, as intense Cold will often happen in the latter end of *May* when the Sun is approaching to the Tropick of *Cancer*; as when he is depress'd as far below in the Tropick of *Capricorn*, yea, and more too, it is sometimes warmer weather in *December*, than in some parts of *May*: So that the height and nearness of Sun, is not always the cause of heat; nor the lowness or remoteness thereof, of cold.

31. And though some suppose the cause of Cold and frosts in the Spring, to happen from the approach of the Sun into the Northern Signes, whereby the frozen Seas near the Pole become melted, and the cold being driven away by those winds which comes over us, give us the cold and frosty air at that season of the Year; which suppose it were so: yet would it nothing infringe our doctrine of the positive essence of cold, but rather confirm it; yet we cannot imagin that to be the cause of intense cold frosts in the Spring; and because, if it were so, then when the Sun came to such a point, as that its heat begun to resolve those frozen Northern Seas; as the heat, I say, of the Sun would be continually resolving those frozen Seas: so answerably the cold frosts which

which should thereby annoy us, would prove as constant, which we see to the contrary; for in *March*, *April*, and *May*, the frosts and cold weather are very uncertain, some days and nights together very warm, others again as cold, then warm again, &c.

32 I rather think that Winds, Heat and Cold, Rain, Snow and Drought, are the Treasures of God in the deep; and that they are committed to tutelary influences of the Stars, which have keys to let them out upon the face of the Earth, at their due seasons appointed by God; and that by those *Pore-ledi* and secret sluices or chanel's in the Air, over which the Stars are placed as Vicegerents, which whether they receive their influences immediately from God, or from some intermediate intelligences, or Angelical Powers, which are deeper than themselves: yet certainly this Divine Chain of coordinate and subordinate causes, reacheth from the Earth (as the Poets feign'd) to *Jupiter's* Chair, I mean from the ultimate product, to the primitive original cause, God himself. Although indeed its far otherwise, as to difference of weather in Islands, than upon the Continent, for upon the main Continent, the temperature of the Air is much at a certainty, according to the points of the *Aphalion* or *Perichalion*, remoteness or nearness thereof to the Sun: and that according to the several positions thereof in different Climates, which as the reverberation of the beams of the Sun is more or less in the lowest part of the Atmosphere, or along the surface of the Earth; so is the heat or temperature of the Air answerable in those places. Whereas in Islands it's far different; for those being environed with Seas on all hands, and it may be some of them old thrown up, as an Abortive Birth, out of the Womb of the Earth, by the great *Demogorgon* or Sub-

Subterranean *Vulcan*; witness the Islands of *Strongi-lo*, *Vulcano*, &c. As well as others have been swallowed up in the vast Caverns thereof, and drowned in the Seas; witness the *Terra Atlantica* which was reputed bigger than *Asia* and *Africa*, was swallowed up by the *Atlantick* Ocean, as the ingenious *Kircker* relates out of *Plato*: Of which great Island those called the *Canary* Islands and others in the *Atlantick* Ocean are suppos'd to be the highest, and therefore left after that Deluge. I say seeing many (and for ought we know, most of the Islands have been belcht forth of the belly of the Earth, and also are incompass'd with the waters, are therefore more inclinable to Subterranean Belchings, Ruictures, Vapours, Exhalations, &c. which in some Islands not finding vent, is the cause of frequent Earthquakes; in others finding Flewes or Chimnies belch forth fire, smoak, stones, &c. But in the third sort of Islands, where there is neither those actual Vent-holes (nor indeed is in need of them) nor is the Vapours so pent up as to force the Earth to a tremulation, but finding passages or pores large enough, breaks forth, and being carryed according to the *Lation* of the *Air*, is the probable cause of those Storms, Winds, Hurricanes, and other alterations of weather within the Orb of the Atmosphere, to which Islands and the adjacent Seas are more expos'd than the large Continent.

33. Cold, we see in Animals, is that which benumbs the Joynts, stupifies the parts, forceth the vital heat to retreat into its inward and more strong forts; which if assaulted there, and overcome, death's at hand, and the combat over. Now if Cold be so great an enemy to vital heat, as is evident, not only from what I have said, but from what every doth or may experiment, than no Medicine as a Medicine is or ought to be cold in its operation.

34. And

34. And therefore to talk of Curing a Fever with cooling Medicines (as the *Galenists* frequently speak) is very improper (not to say absurd) and argues no less than ignorance of the essential cause of a Fever; which because there is a great heat, arising from the boiling and spurious fermenting of the Spirits, therefore they think (according to their own maxim, *Contraria contrariis curantur*) that it must surely be Cured by cold things; and to that purpose, they follow a method of cooling to a purpose, both by frequent Phlebotomy, robbing the blood of its vital treasure, whereby Cold (the great enemy of life) may indeed have better access to the vitals and destroy the sooner, as also by cooling Julips and cooling glisters. Why do not they give them cold water in Glisters, or blow a little cold wind into their breech? surely that would cool notably, and do the work more speedily.

35. It is very strange to me, that their own daily observation, doth not convince of the folly of administering cooling things; They cannot but observe that no good effect follows thereon. It is much to me they should notwithstanding the fruitlessnes of such a method, yet again and again trace the same trod; unless they be resolved never to go out of their pace (*Spaniard* like) though they be lashed for it, both in their Reputation and otherwise.

36. Next to which they cannot but observe (which also most old wives take notice of) that the best and most hopeful Medicines in Fevers, are such as cause sweat; and therefore ordinary people will frequently, without the advice of a Physician, give Feverish Persons something to endeavour sweating: and that often times with very good success. Which is a very fair admonition to Physicians to be more
serious

serious and copious in Diaphoreticks; for therein indeed lyes the main hinge of Curing all sorts of Fevers, which very thing is the least consulted of any other. They will Blood twice or thrice, and Purge as often; and yet scarce will they order one good Diaphoretick: which if they do, is commonly compounded with such a farraginous mixture, as Nature abhors, and as soon sweats to see the folly of the mixture, as naturally inclin'd thereto, by the virtue thereof.

37. Now no Diaphoretick was ever cold in its operation, but always of an heating attenuating property; and therefore of power to promote, the natural fermentation of the blood, and of absterfing the vessels of their recrements, and of carrying away by transpiration, the superfluous tainted *Latex* together with other Heterogeneities (before disturbing the œconomy of the blood) and that through the pores of the body, though not always actually by sweat, but sometimes by insensible transpiration; for there is no better way of taking away the cause of excessive heat in Fevers, than by removing or allaying the bastard fermentation in the blood, which is most aptly done by Diaphoreticks, especially after a previous absterfion of the primary digestions, by some generous Salts, or well prepared Solutives, together with an anodyne as an additional auxiliary.

38 This and no way else according to the tenure of Nature, is (if we must speak in the vulgar Idiom) to cool the immoderate heat in Fevers, or rather, according to our own language, to reduce the blood and humors from their spurious and Feverish, into their own natural, genuine, fermentation, where the erratricks excentrick motions, becomes regular, and every thing falls into its natural course again.

39. So that by this time I hope any *ingenious* Person, will apprehend it to be dissonant to the rules of Nature, and contrary to reason to administer cooling things in order to the Cure of a Fever; and further that hot things (such I mean as are actually Diaphoretick, with their previous preparatory absterfive Salts) are the chief if not the only means to Cure burning Fevers, whether intermittent or continual; and consequently, that the *Galenical* notion and application of cooling things, is very flat and frigid.

40. They altogether prohibite the use of Wine in Fevers; as being (they say) too hot; mistaking still upon the old *Hypothesis*; that heat is the efficient essential cause of a Fever, and therefore must be abated, by the actual presence of a proportionate cold: whereas sometimes I indulge the Feverish Patient with a glass of the richest Sack he can procure, especially after the use of some noble absterfive Salt; or as a Vehicle to give my Medicine in: and that too, because I am satisfied, that heat is not the efficient cause of a Fever, but only a supervening symptome, consequent to the Feverish fermentation.

41. To confirm the truth of what I have said, in order to the application of hot things in Fevers, or acute distempers of Colicks, or the like, I have had an experimental observation upon my self, in a Colical Distemper, together with a Feverishness that accompanied it, which surpriz'd me since the writing of the last Section or numerical division; which, whether it proceeded from cold; or the transmission of an acid juyce into the intestines, or from both; as the occasional cause thereof, or from what other concurring cause, I know not: but however this I am sure of, and felt to my own great trouble; the *tormina*, Pains, or Gripings of the Colick; which proceed-

ceeding from a fermental acidity, roused up an acrimonious *flatus*, that not finding passage *per inferiorem* (that vent-hole of intestine *flatus* or wind) returned upwards, oppress'd the stomach and vital Spirits; thence I became very sick, and was somewhat provoked to vomit.

42. Whereupon, in order to my assistance, I took a Dose of a gentle Emetick; but that not reaching the *Minera Morbi* in the Intestines, I had little ease thereby, but rather grew worse. Wherefore I ordered my Man to reach me a Dose of an abstersive Diuretick Salt; which, within two or three hours, wrought pretty plentifully by Urine, which gave me some ease: after which it began to incline me to words a breathing sweat, and that I promoted by the advice of an ingenuous Friend, who came to visit me, with a Dose of the *Elixir Proprietas*, a Medicine, than which (to taste) nothing is more actually hot; which if ordered to another (who useth rather to consult his palate than his health) he would have thought it, rather to encrease his heat, and to burn his bowels (as that whereof some of the *Galenists* accuse that Medicine) than otherwise.

43. But the success thereof was very considerable, for I had not taken it past half an hour, but my sweat was very much increased, my pains and gripings abated, and my thirst but small; after which I sweat very plentifully four or five hours, during which time, I took nothing but hot burnt Wine. Enough, a *Galenist* would have said (who maketh heat to be the essential cause of a Fever) to have procur'd a Fever, though I found the contrary effect; and have not only taken it my self, but have ordered the same: yea sometimes accompanied with volatile Spirits, as of Harts-horn or the like; and that with extraordinary

inary good success in Fevers, it allying the thirst (which nothing doth better than Diaphoreticks) asswaging the violence of pains, and abating most troublesom symptoms, which accompany Fevers.

44. Nor that I am strictly confin'd to this Remedy, but I the rather mention it, because it is one of those which the *Galenists* severely forbid their Patients; and all their reason is, because it is hot: Whereas we have already shewed it to be not only safe, but also very necessary (I mean) that Diaphoreticks, whether they be hot in the taking, or actually such in their operation, are most likely to Cure Fevers, and other acute Distempers; and that both by discussing the inbred *stasis*, as also by moving towards a separation of Heterogeneties in the mass of blood, both which are most pertinent to be done in Fevers.

The second part of the Saluation of the first Objection.

AND although Chymical Remedies are vulgarly accus'd of being Emphyreumatick, or smelling too strongly of the fire, as passing through the fires thereof; and therefore not so safe as other more gentle Remedies: Yet to that I answer, first, That although the *Galenists* do frequently whisper this in the ears of their Patients, designedly to startle them at Chymical Physick, as at a Bug-bear: yet let them and their Patients know, that the fire is no less useful for the preparation of Medicines, than for the Cooking of meats.

Now, How wholesome would it be for them to eat their meat, as it is brought raw out of the Shambles, without any preparation of the fire, by boiling, baking, roasting, or the like? To drink their Beer and Ale unboyled? To eat their Bread unbaked?

baked? All which to which to make them wholesome and nutritive, require the help of the fire, which prepares all our Food, and makes it more readily submit to the ferments of the digestions.

And as we can do nothing without fire, even in our common Cookery of meats and drinks; so can we do, even as little without it, in the preparation of Medicines: which if they be of Vegetables, they are most what as crude, even as those Vegetables we eat, as in Sallads; which what risings and belchings they cause, especially to weak stomachs, such as eat them can best bear witness.

Besides which crudities, there doth also an acrimonious virulency adhere to many Vegetables, as well as Animals or Minerals, which are no way better tam'd than by fire or ferments; for if they contain the least foisters of virulency, whereby they become actually hostile to the vital œconomy, they then must undergo a correction by the fire, or by ferments (which are equivalent to fire) before they can be made to fit to yield any Medicinal virtue, lurking under the mask of that virulency.

And therefore the *Adepti* corrects all poysonous Plants, Animals or Minerals, by that fiery Solvent, *The Alkabeſt*; by which those mixts forthwith lose their venomous properties, and become exalted in their genuine (though before *dormant*) salutiferous endowments: whose poysonous properties (I mean of Vegetables) may not a little also be corrected by bare digestions, or the addition of succedaneous *Menstruums*; as that of fixt Nitre, or strongly calcin'd Salt of Tartar dissolv'd *per deliquium*, Spirit of Salt, Spirit of Tartar, &c. which often invert the properties of venomous Vegetables or Animals.

All which, together with distilled Vinegar, contribute not a little towards the castigating the Arsenical malignity of Minerals. The latter, *viz.* distilled Vinegar, is very requisite for the extractions of the Sulphurs, Tinctures, or Souls (as *Basil Valentine* calls them) of the Metals or Minerals after their reduction into a spongy *Calx*; which also doth not a little correct Antimony, whether in glass or flowers: yea if poured upon corrosive Mercury sublimate, from which *Aqua fortis* hath been distilled; and thereby sends forth a more suffocating steam, I say, distill'd Vinegar being poured thereon and thence distilled, doth so tame it, that no inoffensive smell doth at all arise therefrom.

Thus also Fire and Salts correct Antimony, as to its Arsenical Sulphur, making it innocent and harmless, only Diaphoretick in its operation: So fire raiseth up the flowers thereof, which (by a further strength of the fire) become only a sweating Medicine.

The corrosive Oyl of Antimony, as also another *Menstruum*, almost as strong as it self, though they are both very corrosive, yet when mixed together, after their mutual operation upon each other, the corrosive Oyl (by distillation) becomes a white powder, which by a slight dulcification proves to be an innocent Diaphoretick: Of which, I have frequently given Twenty four Grains, without any sensible operation at all, further then inclining to a breathing sweat.

Some admire the reason of the strong ebullition of these two mixed together: which are Liquors, as they suppose, muchwhat of the same original, for take (for instance) the *Aqua fortis*, which riseth at first, in the making of Mercury sublimate, only

only with this difference, that these Spirits arise at first in a liquid form, whereas the other that come up with the particles of Mercury are coagulated together in a dry form of sublimate; and therefore much what of the same original: I say, take this *Aqua fortis*, pour it upon the butter of Antimony, which is Mercury sublimate, distilled with Antimony, or *Regulus* of Antimony, and a very strong ebullition happens with a dark red coloured fume. This ebullition is not from the contest of the Salts, for then the same would happen upon the pouring of *Aqua fortis* upon Mercury sublimate (for the Salts in both are the same) which I know, upon tryal, it doth not.

Therefore it is only thus (as I conceive) the Salts in the corrosive Oyl of Antimony, close with the Spirits of *Aqua fortis*, or of Nitre (for the same happens to both) and thereby becomes a powerful corrosive, which presently set upon the flowers of the Antimony contained in the butter, do in effect no more than so much *Aqua fortis*, or *Aqua Regia*, poured upon crude Antimony (for in both the combustible Sulphur is ready to take flame) which calcining, in a humid way, the flagrant Sulphur, burns it off in a dark, thick, horrid fume, even as Tartar and Nitre, by the help of fire, doth burn away that Sulphur in a dry way.

After the Sulphur is burnt away by the corrosive Salts, the flowers become fixt into a *Bezoardicum Antimoniale*; which *Menstruum* being distilled off, is somewhat yellow, and will dissolve Gold, which it doth as an *Aqua Regia* of the best sort, having some of the body of the Sea-Salt which was carryed over the helm in a complicated form with Mercury, Vitriol, and Nitre: this distilled over with the other Salts into a *Butyrum*, close with the Spirits of *Aqua*

fortis, or the Nitrous Spirits, calcines the Antimony, and distill together in the form of an *Aqua Regia*; and all this by the help of fire.

Thus you see a *specimen* of the power of fire, which raiseth up corrosives, and those corrosives dulcise one another, and correct Minerals of their Arsenical Sulphurs; and that by the dry and moist way, which is still by fire. It fixeth things that are volatile, as for instance, Nitre and Arsenick, both which if single are easily consum'd, but joyntly, and helped by the force of fire, the one fixeth the other, and becomes (by dalcification with Spirit of Wine) *Paracelsus* his *Balsamus Fuliginis*, proper against *cacoethical* Ulcers.

It also volatizeth things that are fixed, separates things that are separable, it sweetens four things, maturates crude things, and hastens all productions, whether Fruits or Vegetables, to their perfection, or full state of ripeness; and therefore unripe Berries, Apples, Apricocks, &c. are by Coddling or Baking suddenly dulcified; and Sallads whether Lettuce or other herbs, are made more wholesom by boiling.

By a digestive heat in close vessels, caustick acrimonious plants, as *Flamula Jovis*, *Urtica Romana*, *Perficaria*, &c. become blunted and lose their sting; yea, even the same happens by bare distillation of them, though no stinging or pricking acrimony is at all perceptible in their distilled water.

These things duly considered, will necessarily evince the extensiveness of the use of fire, both as to Food and Medicine. Vegetables are not only crude, but many of them virulent too; and therefore need fire to ripen them, and by correcting their venomous properties to make way for their intrinsic Medical
vertues

virtues to appear: Also Animals communicate not their virtue, which lodge chiefly in the Blood and Urine, unless helped by fire, or ferments, or both, whereby their parts become separable, and applicable to our mummial ferments.

And as for Minerals they are mostwhat virulent, and lock'd up; and therefore of necessity require a correction and opening of their virtues by the fire: which must be done by such degrees of fire as are proportionable to the strictness of the texture of their bodies, and to the prevalency of their virulent properties, which cannot be done by such gentle soft fires, as Vegetable separations are usually performed by.

It is for the sake of the unlocking these Minerals, that the great stress of fire is so frequently us'd in the Chymical *Analysis* of them; which gives cause to the *Galenists* to accuse *Spagyric* Preparations, with being too much fired: which how frivolously grounded, Let all that have skill therein, judge.

For a strong fire is as requisite, in some Mineral Preparations, as a mild fire to some easie Vegetable separations; the one altogether as proper and necessary as the other. Would not a Cook-Maid be accus'd of ignorance, if she intending to Roast a joynt of meat, should lay it down at a disproportionate distance from an ordinary fire, thinking to take a longer time to do it in? Surely if the distance from the fire was such as only to warm the meat gently, it would not for many days, and (for ought I know) never Roast; but would dry up, become insipid, and turn to a kind of mummial flesh.

For as I apprehend, Roasting of meat is perform'd thus, viz. When the meat is plac'd at such a competent distance, as that the fire penetrating the

midst thereof, forceth forth the crude blood and moisture from all parts; which meeting with fresh assaults of fiery particles, are driven back again, and search all cavities of the flesh, thereby maturing the rawness thereof: which if the meat be taken whilst this moisture remains, and yet thoroughly penetrated by the digesting particles of fire, it is then sapid, sweet, and savory; but if this be spent, and the meat yet kept longer at the fire, then it begins to be burnt, and thereby becomes tasteless: but if it be perform'd by a pretty quick fire, it's the soonest and best done. So in Baking of Bread, if the Oven be not thoroughly heated, the bread will remain dough, and not wholesom for food. Though these be homely Examples, yet are they sufficient to demonstrate the necessity of degrees of fire, to be us'd according to the strictness or remissness of the texture of the body, applicable thereto. Besides I look upon my self here, as speaking to those who need familiar comparisons, to convince them thereby of the necessity of strong fires in some cases; for to those acquainted with Chymical Preparations, these are superfluous.

Again, What Preparations are there in Shops, which have undergone the fire, but are Chymically Prepared; and yet no less (notwithstanding) useful in order to the removing of Diseases? What are all the Spirits and Cordial-waters, but Chymical Separations of Urinous Spirits, marryed with the tinctures and odours of Aromatics: and that by distillation by the fire? What are the best of their Purging Pills, viz. the *Extractum Rudi*, but a Chymical Extraction of the tinctures of so many Vegetables (as is requisite thereto) by a good rectified Spirit of Wine, which if neatly done, and drawn
off

off in *Balneo* (as I do in the making it for my own use upon occasion) and the fixed Salt of the species after calcination and separation thereof, being reunited with its extract, is not only Chymical, as being prepared by the fire, but the very best amongst the Shop-Purges.

What are the best Emeticks or Vomittings in the Shops, but such as are Chymically Prepared, and that by force of fire too? Witness the infusion of *Crocus Metallorum* and *Mercurius Vitis*: The one is prepared by fire and Salts, out of Antimony (which we call *Hep. r Antimonis* from the Hepatick colour thereof) whereby the external malignant Sulphur of the Antimony, is most what consumed.

The other is prepared by fire and Salts out of Mercury and Antimony, but consists chiefly (if not solely) of the flowers of Antimony incorporated with the Salt in the Mercury sublimate, and carried over together in a glacial Oyl: For in an accurate observation of a distillation thereof, with sublimate and *Regulus* of Antimony (which sublimate we also made, and so knew the quantity of Mercury therein) we in a manner got all our Mercury current again, and of Eighteen Ounces of *Regulus*, we had but six Ounces or scarce so much left in the *Caput mort.* Which very Experiment makes me close with *Barthius*, who concludes this gummous Liquor to be the Reguline parts of Antimony; and against *Gluckradius* who would have it to be from Mercury, affirming that the Antimony only by its addition helps the fusion and liquefaction of the Mercury in its distillation; and against *Bilichius* too, who, with *Gluckradius*, would have it to be nothing else but Mercury, brought over in a glacial Oyl, by the help of Salts, so as the Antimony only

onely contributes towards the liquidness of the Mercury, as bole, sand, earth, or the like doth, towards the distillations of Salts, with which they are us'd as a *Resinaculum*.

But our Experiment doth wholly thwart this, for out of three Pound of sublimate (in which, by compute, we find about Twelve Ounces of Quicksilver in each Pound) and Eighteen Ounces of the *Regulus* Antimony, we had one Pound an half of the Oyl, two Pound and about four Ounces of current Mercury, and in the *Caput mort* scarce six Ounces: here the whole weight of the matter we took, was four Pounds two Ounces, answerable to which, we got one Pound and half of Oyl, two Pound four Ounces of Quicksilver, and six ounces in the *Caput mort*; in all four Pounds two Ounces: so that we lost nothing.

Now how should Mercury make up the body of this Oyl, when we got it in a manner all current again, as it was at first before sublimation, with Salts? And why should not the *Regulus* make up the body thereof with the Salts? Seeing we lost Twelve Ounces of the *Regulus* which must needs make up this butter; for that quantity of *Regulus* which we found defective in the bottom of the Retort, together with as much of the Salts out of the Sublimate, made up the whole of the butter (*viz.*) one Pound and an half.

Again, Whence should proceed the strong Sulphureous fumes, upon the pouring of *Aqua fortis* or Spirit of Nitre thereon, but from the Sulphur of the Antimony, which it has in greater plenty than quick Mercury has. Besides if the white powder, *viz.* *Mercurius Vita* (so called) be put into a crucible, and try'd further by the fire, we have observ'd it

it to flow and fume; over which fume, though we directly plac'd a *Spatula*, yet have we not discovered the least minute particle of Mercury thereon; which from other vulgar Preparations of Mercury, brought to the test of fire in a crucible, we found particles of current Mercury, viz. from Mercury precipitate, Turbith Mineral, factitious *Cinnabar*, *Mercurius dulcis*, Mercury sublimate, all which gave a specimen of the body of Mercury, but this of *Mercurius Vita* none, but melted into a kind of *Stibium* or black glass, in the same manner as any common preparation of Antimony will do.

As to the main argument *Bilichius* brings, which is, *Ego quoque inquit Mercurium vita, pulvisculo Tartari purificati permixtum, & modico, assamen diuturno calore in arena exercitum, vidi Liquoris aeterni guttulam unam atque alteram sudasse*: which I rather judge might be a particle or two of the Mercury of Antimony, than of the vulgar Mercury, at first contained in the sublimate; for it is the very way, at least analogous, to that which some propound, towards the getting the Mercury of Antimony.

Yet we cannot but admire at that wonderful operation thereof, which *Bilichius* (and besides him none that I know) takes notice. After he has given a large *Encomium* of the virtues thereof, in order to the Cure of several Diseases, both acute and Chronical, he subjoyns, *Quin etiam mulierculis periculossimè parturientibus felicissimè obstetricantem vidi: & quum debitas puerperio dolores crudelis Lucina negaret, jamque fere triduum irrisu conatibus maiorem fatigamque defatigasset, ut cenni solo amborum responderet, imò omnium opinione, conclamatum utique videretur, in hoc discrimine non deseruit me putis familiarissimus,*

miliarissimus, sed pondusculo siliqua cum vini momento propinatus, effecit fortunante Deo, intra horulam, ut pro justis funebribus soteria usuvenirent, & pro parentalibus celebrarentur Natalitia: Et quantum vite studeat, non sine miraculo, demonstravit: si venenata qualitate grassatur in corpus humanum, non percisset tenella proli, non puerpera doloribus exhausta benefecisset, sed afflictas afflixisset, & pene morientibus accelerasset mortem. Nunc secus accidit; utramque juvit, neutram laesit; vimque omnem expultricem non aliorum atque in uterum convertit. I confess I never yet tryed the Experiment, though his authority is sufficient incouragement thereto.

So that both these foresaid Preparations, which are the chief Emeticks of the Shops, are, I say, both out of Antimony, which very Mineral is that the *Galenists* so deeply accuse, and tell their Patients how dangerous a thing it is, and that they will order no such dangerous Ingredient; when perhaps the next prescription will be infusion of *Crocus Metallorum*, or some few Grains of *Antimonium Diaphoreticum*, or the like: not to mention here the *Sal Vitrioli* or the *Gilla Theophrasti*, which they seldom prescribe, either because they have them not, or know not their virtues.

What is their best Medicine for worms, which they also frequently use against venereal Diseases, but a Chymical Preparation called *Mercurius dulcis*? Made out of Mercury (another Mineral (or rather Metal) they inveigh against) and that too out of the most corrosive sublimate, than which (save the Oyl of Antimony) nothing is more desperately corrosive, and yet out of this corroding product of Salts, Mercury, and Fire, with the help of more Mercury and the further use of Fire, is This innocent harmless Medicine

Medicine, Chymically Prepared, which is so safe, as is frequently given to Children against the Worms; and that (so the Dose be duely ordered) without the least harm, as all those who use it can testifie, especially if the Preparation be rightly done.

What are the fixt Salts in the Shops, as of Tartar, Wormwood, Broom, Scurvy-grass, &c. but Chymical products made by force of fire? For the fire, especially the naked force thereof, separates all separable parts; and in the actual flagration, the Vegetable Salt takes hold of the Sulphur, the one bears down the other by force, to suffer all the injury the flames can do, and so become fixed together, whence proceeds the *saponaryness* of all fix'd Salts: and that it is the Vegetable Salt (which while it's in the Concrete, before any violence be done, is neither fix'd nor volatile) which catching hold of the Sulphur in the flagration of the Plant, that gives strength to the Salt, is apparent, because in the burning of Vegetables for to get (or rather to make) their fix'd Salts, if it be done whilst the Plant is in its full strength, before it begin to spend it self into seed, the more in quantity, and the stronger, is the Salt found to be. &c.

And therefore those who burn Brakes for their ashes to make Bale-soap of, do it while they are green and strong, cutting them down, and then give fire to them, and so let them burn in great heaps, with a smothering fire: Thus the Vegetable Salt catcheth hold of the Sulphur, and both being in their full strength, the one bears down the other, and gives a great quantity of Salt; whereas if they should let them alone till they turn yellow, and then burn them, they would not get (as they find by experience) half so much Salt.

The

The like should be observed in the burning of all Plants for their Salts, to take them at such a maturity, as before they be impoverished by wasting their strength in seed; for at the time of seeding of Plants, the essential Salt, by a further digestive ferment, conatural to the Plant, becomes transmuted (for the most part) into a Sulphur, which gives an Oyl: and therefore Plants, during the time of their seed, yield Oyl most plentifully.

This Sulphur opens it self yet further, and spends its self in a flower, or fruit (*In Sulphuribus insunt sapores, odores, &c.*) and these decaying, the Plant grows weaker and weaker every day, till it wither; which withering, is nothing else but a spontaneal Analysis of the Plant, by the exit of the Essential Salt, which gradually taking wing, or changing into Sulphur; and that also taking flight, the body thereof (as to the form) marcheth off the Stage, and is at last reducible into the *Lesser Terra*, which begins the Wheel again to a new circle of Vegetation: So that the several *Graduum* of this Salt gives the various apparencies of growth, maturity, and old age of Plants.

For this Essential Salt, in its circuit of Vegetation, assumes the form of Sulphur, at due seasons; yea, is actually transmutable thereinto. Whence it is, that the more Plants yield of an Essential Oyl, the less they give of Salt, either fix'd or volatile; so that Salts and Sulphurs, are but the various disguises of feed: and therefore may give hint to ingenuous searchers, how to turn Salts into Oyls, and by a further inspection, how to reduce Oyls into Salts, which thereby (as *Helmont* saith) becomes noble, temperate, absterfive, penetrative and balsamick Remedies.

What

What are all the Essential Oyls of the Shops, such as of Rosemary, Sage, Wormwood, Cloves, Nutmegs, Cinnamon, *Sassafras*, *Rodium*, &c. but Chymical Distillations, of the Sulphurs of Vegetables, and Aromatics? One drop or two of which, contain more virtue than is got from a whole handful or more, of the Vegetable infus'd, decocted, or prepared any other ordinary way. These either united with their fix'd Salts, or made into an *Oleo-Saccharum*, and given in convenient Vehicles, yield not a little of the *Crasis* of the Concrete; and therefore are Medicines of no very inferior order.

So that, if we take a summary account of all the dispensatory Medicines, and make a separation of all the Chymical Preparations, from the rest of the farraginous compositions, we shall find (if anything considerable be done in the Cure of Diseases) it is chiefly effected by the Chymical Preparations, though they themselves in respect of the more noble Chymical *Arts*, are but Preparations of a lower rank: The rest as Syrups, Conerves, Electuaries, &c. have little or no virtue.

If the *Galenists* would but improve that small stock they have of Chymical Remedies, by endeavouring to graduate them farther, by the help of fire and ferments, they would not only, not quarrel with the Chymical Practice of Physick; but also find that whatever of excellency was perform'd, in order to the Cure of Diseases, would really be most what from such Preparations. A right understanding whereof, would compose them in their heat and swellings, against Chymical Physick; and make them ingenuously confess their former ignorance: and at length acknowledge the wrong they have done to that noble Science; by accusing its Medical Preparations of Empyreumatism.

For

For by a little experience therein, they would learn to know, the degrees of fire suitable to the texture of Concretes, brought to the test thereof; and that no less alterations are made (in bodies adapted thereto) by gentle fires of digestions, and easie distillations: than by more strong fires in operations upon more *robust* bodies. For there are and may be found out, many more excellent Chymical Preparations, which are perform'd by very gentle heats, without any stress of fire, and yet powerful in a benign operation.

So that the fire, by a skilful Artist, may, in its degrees, be adapted to those bodies he takes in hand, according to the nature of the compaction thereof; also those Concretes, especially Minerals, which mostly undergo the probation of the fire, do thereby become depurated from Heterogeneous combustible *sortes*; and losing all their dross, become approved Remedies by the fire; able to penetrate the intimate *Recesses*, and to purifie the digestions of our bodies, and to cleanse our blood and other humour from their impurities, into these primitive elixicated juyces, from whence by alienation of the digestions they have degenerated.

The Solution of the second Objection.

45. **A**N other thing, wherewith they impeach Chymical Physicians, is, That they are not methodical, but empirical in their practice. In answer therefore to which, we first Query, Whether that be not the best method, which Cures Diseases best, according to that ternary of *citò, tardo, & jucundè*? Whether the *Galenical* or Chymical Physician doth perform this the best, is the dispute. The next Query

Query is, Whether to be so accurate, in the punctual observation, of all the injunctions of the Schools, be altogether, or at all necessary to make a Physician cure Diseases the more successfully?

As to the first. I say, The Methodists, I mean the *Galenists*, do pretend to a method in the curing of Diseases, according to the level of which, they pretend also to answer all indications; which gives yet further to Query, Whether this method they so much admire; be not more directed to the mitigating of the Luxuriant Symptomes, viz. the lopping off the branches, than to the immediate encountering with the essential cause of the Disease; viz. the stubbing it up by the roots? I mean, Whether (suppose in any particular Disease, for instance a Fever) their method doth not more aim at the suppression of the Symptomes, viz. the heat, thirst, want of rest, pains, &c. by Phlebotomy; cooling Juleps, Emulsions, frequent Purgations, *Laudanum*, and the like; than, I say, at the essential cause; which lies in the initials of the spurious fermentation of the blood; &c. so consequently level their Medicines in their methodical rank and file, against the posterior products and branches of the Disease, rather than against the Disease it self.

For unless the *Theory* of the Diseases were certain and infallible, the method of practice grounded thereon cannot be satisfactory to any ingenuous man; for if he espy a flaw in the method, by observing it, for the most part, not answering his expectation in the cure of Diseases, it will give him just cause to suspect an error in the *Theory*: and by that time begin to question both, yea, and lay them aside too, if he can but discern another more probable *Theory*, whose consequent practice, doth more certainly enable him to cure Diseases more happily.

Now to be better convinced of the inefficacy of the *Galenical* method in the curing Diseases, Let us consider how often, in most Chronical Diseases (for in acute they have not that time) is their method baffled. How frequently do they run over the same course of Physick, even till the Patient is tired out and out, having their vital Principles more really weakened, and linger in an hopeless manner, under the tyranny of the Disease; and after all this, that the Methodists have spun out their longest thread and left them, some honest Country-man or good old woman hath a specifick Remedy, which they have known, by experience, to have done good in the like case: and the Patient is now (though not before) at leisure to try it, takes it, and though his or her skill is not so good as to give it with such advantage, as some congruous circumstances might second it withal; yet (I say) often succeeds; and cures the lingring Patient of his Disease, made worse by a method.

Now because he which gave this Remedy, did it without the formality of a method, if by the good success thereof, he be encouraged to give it frequently, he gains the name of an Empirick, viz. one who gives a Remedy at random, without a method, or without being able to give a reason for the operation of his Medicine. Whereas indeed if we make a scrutiny into the essential reasons of the operation of Medicines, I am apt to question whether any Methodist, can give a solid satisfactory reason, of the operation of any one Medicine he gives, in his whole method; and that, because the reasons and causes of things are so very abstruse, as *Jurare in verba Magistri*, to subscribe to the placets of other men, is not enough, to any ingenuous man, to satisfy himself in the reasons of things, attainable thereby.

And

And if I should Query, why the infusion of *Stibium* or of *Crocus Metallorum* should operate by Vomit and Stool? And why the same if further prepared by the fire and salts, should operate by Sweat?

And to the first it be answered, That it provokes Vomit because it hath an antipathy to, and disagrees with the stomach. This would be no sufficient reason, because many other things may have an antipathy to the stomach, and yet not cause Vomit; but may either rouse up an incoercible *flatus*, or may march off by Stool. So that for things to disagree with the stomach, is neither the real cause of Vomiting or Purging; though it is true, there must of necessity be a concomitant disagreement of the thing with the stomach: But what that is that makes the antipathy, is the thing in question.

To say that a Vomiting meeting with vicious humours upon the stomach, dissolves them, and provoking the expulsive facultie of the Stomach, forceth them up by Vomit, is still no sufficient reason or answer to the Question: For, What can one Ounce of Wine; only impregnate with a Mineral odour, do, as to the dissolving of corrupt humours upon the Stomach, and to provoke the expulsive faculty with such violence, as by the convulsive motions of the stomach, to throw up what is in the concave thereof? What are the humours of the stomach to it? It's in taste and colour, almost the same, with so much simple Wine. How should the expulsive faculty become thereby concern'd, unless we have recourse to what we said before, *viz.* the antipathy thereof with the stomach or *Regent* powers thereof; And so be, at as great a loss still, as to a true Solution of the Query, as before.

As to what the Atomical Philosophers say in this

case, I am not satisfied, that they give a resolve to the point; who would have all such actions of Vomiting and Purging, to be performed by the concurrence of various siz'd particles, acted by different motions: which impressing the like motions upon the nervous and membranous parts, cause that *Systole* or convulsive motion of the stomach; which by compressing and contracting it self, throws up what is contained therein. Who though they go on slyly and cunningly, in the weaving their Atomical texture of bodies, and make all Creatures to be but as so many *Automaton's*; who like a Clock, or Watch-work, being once wound up, keep going from their Springie power of motion: Methinks, they do as much *petere principium*, as the former, in that they take it for granted, that what we call Life, is nothing else but a result of motion and figure, in all bodies. For though all bodies as to the whole, and to every sepe-
rable part, are constituted of form or shape, and acted by motion, as the body stands inclined to its *Genesis* or *Analysis* whereby all things are in a perpetual Flux, and constant transmutation: Yet this evinceth not motion and figure to be the cause of that we call Life, or, as they say, that there is no other existence of any *Anima sensitiva* than that, but rather that motion and figure, are the sequels of Life: Besides, methinks, the niceties of vital function, are too curious to be solv'd by so slight an *Hypothesis*.

Again if we endeavour to answer the Query, according to the Chymists, viz. That it is the odour of the combustible Sulphur of the Antimony, where-
with the Wine being impregnated, becomes hostile to the *Archeus* or *Anima sensitiva*, which hath its chief residence in the stomach; which being provoked; ceaseth not by opposition to that which offends,

not

not only to through it off, but also the depraved humours, which lie fast impacted in the tunicles of the stomach. Which indeed is a fine notion, and very probable to be near the truth, yet, to me, the same Query remains as indemonstrated as in the former, viz. How rationally it gives a satisfactory account, Why the infusion of *Stibium* should act as an Emetick rather than any other way? What do we know, what this odour of the Sulphur of Antimony is? And why the *Anima sensitiva* should rather be offended than pleased thereat?

I say, how difficult a thing would it have been, to have given a rational account of the manner of its operation, so as to have said, so and so, according to reason, will it work, and this before an experiment thereof had been made; for when we see a Medicine to work by Vomit or Stool or Sweat, we then presently fall to conjecture the reason thereof.

But for one to have according to rational Prognosticks, predicted that *Scamony*, *Colocynthis*, *Senna*, &c. would Purge; and that before ever they had been found so to do, by experiment, would have been a satisfactory evincement of the reason of the thing: but this is more competible to the intuitive cognition of the immortal Soul, whose out-goings is pure reason; And therefore while we converse in these mists of the body, we must descend to a lower order of reason. Whereas in the *Mathematicks*, in that part thereof call'd *Algebra*, there are some *Petita* that so the *Quaestio* may the easilier be found out: So likewise in the ratiocination, about apparent *Phaenomena's*, there is a necessity of laying down some *Petita*, which ought to be few, yet fruitful principles, which are indemonstrable *a priori*, to which all apparencies are ultimately reducible; and by which the *Quaestio*, things inquired after, may be found out.

These pregnant Principles ought to be ground-
ed on solid experiments, towards which, the *Virtuosi*
are performing a considerable work, in gathering
experiments of all sorts; out of which, in tract of
time, a noble demonstrative Science may be raised
up.

Now, That sense and motion are the product and
sequel of Life, and not the Life it self, nor cause
thereof, the Life only should (as I apprehend) be
that one primary Principle to which all the *Phanome-
na's*, or apparencies thereof are reducible; which
being simple, and simple in it self, hath all fermenta-
tions, digestions, motions, sense and heat, &c. as
subservient thereunto: All which as instruments, per-
form the various functions thereof.

Now, that sense and motion, are but the sequel of
the *Anima sensitiva* (that *Regent Spirit*, unto which
the whole oeconomy of the body is subservient) is
obvious in a Paralytick and Apoplectick Distemper;
where sometimes sense remains, and motion is de-
prav'd; otherwhiles there is motion and no sense,
and yet Life is present; yea sometimes in Hysterical
Diseases, both sense and motion are abolisht for a sea-
son, and the body lieth as dead: and yet Life ly-
ing as it were in its embers, or in a crude smoak, by
a Ray, from the immortal, which hath wrapt up the
mortal Soul, darting from the heart, becomes in-
kindled, takes flame, and lives again, to the aston-
ishment of the beholders.

Yea, sense and motion in violent Hysterical Passi-
ons, hath been so much deprav'd, as able Physici-
ans have sometimes given them over for dead; inso-
much that a great Physician and skilful Anatomist,
coming to a Woman, who was suppos'd to be dead,
and being desirous to inform himself of the cause of

so suddain a death, attempts to Anatomize her, who upon the very first touch of his dissecting knife, suddainly started up; which so terrified this Master of Anatomy, that he could scarce recover himself to consider how after all his skill and diligence in that Art, he should be so deceived, as to offer at the dissecting of a living woman: which struck him with discontent, and taking it to heart, despaired, and died.

And as sense and motion, so also fermentation and heat; also chusing, and eschewing that which is agreeable and disagreeable, are the products of Life: Whence also to raise a structure of reason; why some things work by Vomit, other things by Purge; though it may be plausible to some, yet will not be satisfactory to others.

That three or four Grains of *Mercurius vita*, should work so strongly by Vomit, and as many Grains, of the extract of *Colocynthis*, should work so forcibly by Stool, cannot rationally be imputed to any other efficient, but that *Spiritus impetum faciens* of *Hippocrates*, upon which these violent Emeticks and Catharticks seizing, by the disgust the *Arshens* or *Anima sensitiva*, takes at that which is hostile thereto, which yet how to describe we cannot tell) rouseth up a spurious fermentation of the humours of the stomach and Intestines, which if strong, works up by Vomit, as is apparent in the administering of the infusion of *Crocus Metallorum*, viz. That, while the Regent Spirit of the Stomach, is most provoked by the force of the Emetick, it causeth such an hostile fermentation, which reacheth even to the bottom and round the sides of the stomach, till it forceth up the Emetick Wine, and with it the humours into which, it, as a ferment, hath wrought it self, and so nature disburdens it self of two Enemies at once; after

the violence of this emerick fermentation is over; that which remains, gliding through the *Pylorus* into the Intestines, doth there cause a further fermentation in the juyces therein contained, and so passeth off by sledge.

Now all Solutives operate one of these three ways, either as they are abstersives, which raze off the *sordes* from the sides of the primary vessels, of which sort are all absterfive Salts, such as have a saponary *Alkali*, wash off the adherent *sordes*: and these are the essential Salt of Tartar, and sometimes the volatile Salts of Urine or Harts-horn, as also the *Elixir Proprietatis* acuated or extracted with the Solution of the essential Salt of Tartar, in the *alcohol* of Spirit of Wine, and chiefly the volatile Spirit of Salt of Tartar.

Or secondly, Solutives operate as they remind the digestions of their offices, of which sort are *Pilula Ruffi*, *Pilula Alophangina*, the *Scotch Pills*, &c. taken in a small Dose; which, though they are not properly such Solutives, yet are pretty innocent *Succedanea's*: but above all, the *Arcanum Corallinum* of *Helmont*, is one of the true Solutives, which only puts the digestions in mind of their office, and as *Helmont* saith, only Purgeth what is corrupt in the body, not purging at all a sound body.

Or lastly, Solutives operate by exciting an exotic fermentation in the humours, or fluids of the first vessels, and circumjacent parts, and that either by the virulency of some Vegetables seated in the resinous parts thereof, as of *Scamony*, *Colocynthis*, *Falap*, *Agarick*, *Elebor*, &c. or by the odour of the Arsenical Sulphur in Minerals, promoted by the operation of Salts, as of *Mercurius vita*, *Crocus Metallorum*, *Sulphur Antimonii auratum*, &c. All which

which become fermental in their operation, and if the Dose and strength of the Patient, be not duely proportion'd by the skill of the Physician, they become too fermental; not only carrying off all good, and bad humours from the stomach, and other common passages, but also by an *Hypercatharsis* colliquate the very blood, yea, and solid parts too, into a putrilaginous excrement carryed away by Stool.

Hence it is, that by the fermental venom of these Drugs badly prepared, and as unskillfully administred, that incredible number of Vomits and Stools, or only of Stools, happen sometimes to Patients, giving them Thirty, Forty, Fifty or Sixty Stools, even almost to an exhausting of the very strength of the body, which is done by an impressing, the almost indeleble venenous Character of the virulent Drug upon the *Pylorus*, which at first, working forth all the contained humours of the first passages, and still retaining the same fermental impression, to which as a virulent thorn in the part, all the other humours whether blood or other liquids, have their conflux, endeavouring thereby to wash off the venomous stain; but not being able to perform that work, by reason of the prevalence thereof, are forthwith transmuted into a slimy putrilage, with griping pangs at every solution, and so carryed away by Stool, to the great impoverishment of the Spirits and strength of the body: Which sometimes brings on a sudden *Tabes* preying upon the very solid parts, and thence too hastens on Death it self.

Thus you have a reasonable account of the manner of the operation of Emeticks and Catharticks; though I dare not be positive therein, but only give fair and probable hints, which may perhaps incite some others to a further prosecution thereof. Yet
how

how these malignant properties in some Concretes, and benevolence in others are found out, is better discernable by the eye and sense of the *Regent Spirit* of the stomach, then that of reason; for all are not alike virulent to all: so things which are very wholesom and useful to most, yet are disgusted as poysons to others. How far custom may prevail, as to cause some to take that quantity of a *Toxicum*, which would inebriate, stupefie, or kill another, may hence appear. I have known a man so accustom himself to *Opium*, as that every night he would take Ten, Twelve, or Fifteen Grains thereof; without any previous preparation, which if he neglected to take, he was commonly dull and stupified the next day; whereas the taking thereof made him chearful and lively, which given to another, would have stupified, brought a *Delirium*, or perhaps by the prevalency of the *Toxicum* might have proved mortal: all which are scarce solvable by the common Principles of the Schools, but are better reducible to that common Adage, It was *the nature of the Beast*.

Why Vegetables are found to have such virulent properties, we shall not long dispute. The ingenious *Kircher* in his *Mundus Subterraneus* tells us that they proceed from Mineral Arsenical juyces, fermenting in the earth, where such Vegetable seeds are, which incorporating themselves therewith, become thereby the Authors of such virulent fermental poysons, or *Toxica*, whence *Napellus*, *Hyoscyamus*, *Cicuta*, &c. take their virulency: but I shall wave that, least I too much lose my method.

If the reasons of things be so abstruse, as I have before shewed, I mean, the true cause of the operation of Medicines, be so difficult to understand; and that the very best knowledge we attain to therein,

is

is taken from and grounded upon experiments or tryals: and that these experiments are as likely to fall into the observation of those who are ignorant of a method, as of those who are skilful therein, What advantage there hath a Methodist, whose very grounds and Principles are either found unsuccessful in practice, or much what contradicted by Experience the grand Mistress of Knowledge?

For the order of our knowledge is inverted, since it was intuitive, since now we only know *a posteriori* from the products and effects of things; whereas then we know from the very essential causes themselves. So that now experiment is the road to knowledge; all other (except that which is Divine) being most what conjectural, and therefore fallacious.

In this sense if we were more Empirical, *viz.* adher'd more to tryals and observations of other persons (though under a mean form) about Concretes of this nature, we should probably be more successful in Curing of Diseases, be better Physicians, though perhaps less methodical; and that, because nature in the *Phænomena* of Diseases, and Cures thereof, is not tyed to any of our prescribed methods, though never so specious: but our method or manner of ordering due applications for natures help, ought rather to be confin'd to the laws and possibility of nature, and to good collateral observations from successful experiments.

To which purpose it doth not at all mis-become a Physician to enquire into experiments of all sorts of this nature, even from circumforaneous, Empiricks, Quacks, Barber-Chyrurgeons, old Wives, Farriers, Midwives, or from any other persons, to whom

whom experiments of this kind may happen: By whose ingenuous observation from such like ordinary Peoples experiments, no small light happens to the more ready Curing of Diseases.

For from such Persons (if credible) you have nothing but naked matter of experimenty unassisted by Art, which often, because simple, and therefore more singly co-operative with nature, proves more efficacious in performing Cures, than the splendid *Recipes* of most fam'd Physicians: and that because these are so learn'd, as that it would seem (as they suppose) ridiculous to insist upon one, two, or three Ingredients (and perhapsthose but of ordinary account neither) for them to prescribe to a Patient.

And probably one reason, why great Physicians are often so unsuccessful in their Cures, though they attempt them by some such Concretes, as they hear a fortunate report of, is, because they are not content with the simple Remedy they heard of, but adding this and the other, and a third, &c. of such as they think have the like qualities (according to that saying, *Vis unita fortior*) do so confound the mixtures with their additionals, as they quite spoyle the operation of its genuine efficacy.

So that one may certainly conclude, that that manner, way, or method, which Cures Diseases most happily, sooner, and with less trouble, and debilitation of Spirits, is the best; which must be such as is mostwhat grounded upon collateral observations of successful experiments, and not from farraginons *Recipes* in Books: and whether Chymical Physicians are the most likely to perform this, I shall refer to the judicious Reader. And this brings me to the other Query, *viz.*

Whether to be so accurate, in the punctual observations,

various, of all the injunctions of the Schools be altogether or at all necessary to make a Physician cure Diseases the more successfully?

When I consider the tedious and almost inextricable Labyrinth, wherein young Physicians are commonly involv'd. How many great Volumes of *Galen*, *Hippocrates*, *Dioscorides*, *Albucasis*, *Rasis*, *Serapio*, *Aetius*, *Averrhoes*, *Hernius*, *Fernelius*, *Sennertus*, *Riverius*, cum multis aliis, they revolve? What tedious pieces of Anatomy of *Veslingius*, *Riolanus*, *Bartholinus*, *Spigelius*, *Pareus*, &c. do they peruse? How many unprofitable Discourses, for argumentation sake, in the Theory of Physick, are they engag'd in? How many hundreds of Plants do they burden their Memory withal? And that both as to their form, which must be, as well when the Vegetables are young, as when come to maturity, together with some slight touch of their Virtues, according to the superficial description of the Herbs? What a confus'd jumble of the varieties of Pulses, do they puzzle their heads withal? What a multitude of Symptomes, good and bad? What long Discourses of differences of Urine? And to confirm all this, What long Pilgrimages into *Italy* and to the Universities there, must they make? And returning home after all this, cannot (as some of them have ingenuously confess'd, and the Country-People brought to the test) certainly Cure one poor Disease.

I say, when I consider all these things, I cannot but wonder and say *Quorsum hac omnia?* What's the meaning of all this noise, and yet so little Wool? I mean, such a deal of doe to inform our judgments, and yet nothing the nearer to cure Diseases, being only inabled hereby, to discourse learnedly with
other

other Physicians, and with a great deal of elegance, read a Lecture to the Patient of his Disease, that it is in this, and the other part, and proceeds from Phlegmatick, Cholerick, or *Aduſt* humours, or the complications thereof; whilst the poor languishing Patient crys, *Give a Remedy, or else I dye*. Thus they prove too eloquent to a languishing Patient, who had much rather hear of a good ſutable Medicine, than to be tantaliz'd with learned Discourses.

Young Students in other Countries, commonly go along with a learned Profeſſor, to whom he frequently reads Lectures, upon the ſick Patients he viſits; and doth it with ſuch a grave method of Diſcourſe, pointing out the Symptomes, answerable to the predominancy of ſuch and ſuch humours; and that in ſo learned a ſtyle, meaſuring out the lineaments and dimensions of the Diſeaſe in its riſe, ſtate, and declenſion, as that the young Students do verily believe (if their method of Medicine be but answerable to that of their Theory) that none of theſe Diſeaſes can come amiſs to them, but they ſhall ſurely cure them all.

But alas! When they come to matter of experiment in their Practice, they find, they are miſtaken, they are puzzled at every turn; and ſome of them, that are moſt ingenuouſly inclin'd, begin to be convinced of the emptineſs of their learned Theory, and of the barrenneſs of their fruitleſs method: and that in truth and good earneſt, they are not certainly able to perform the cure of any Diſeaſe, not ſo much (as ſome of them have acknowledged) as a *Paronychia* or Whitlow.

To what purpoſe are the various Diſcourſes of Phyſick, and that in a methodical way *pro* and *con*? aſſerting this and denying the other, troubling the heads

heads of Practitioners with empty speculations; which are no sooner conceived, but before they are well brought forth, are ready to be strangled, even in the birth, with other equally, or more rational apprehensions, and all this but in a putationary; and consequently deceitful Philosophy, whose principles not being grounded upon experiment, prove themselves merely fictitious, and at the best uncertain.

What satisfaction can an ingenuous man take, from the manifold Doctrine of Pulses? Which are altogether irregular and uncertain. What great number of their difference is set down? Enough to fright a man, at the first sight, from vexing himself therewith. How cumbersome to the Memory, are the very terms of Art? Which alone were enough to make up a Science, sufficiently troublesome to retain in the Memory, yea and sometimes put it upon the rack too.

How do young Students trifle a great part of their time away at the Universities, in the froathy Study of Logicks, Ethicks, Physicks, and Metaphysicks? And all this in order (to those who bend their Studies that way) to Medicks? From which besides the empty speculations and verbal janglings, little of worth doth thence proceed; And what is the reason? Only this, That they have not sufficient matter of experiment in their Physicks, to ground a true Science upon; and as to Ethicks, they more consult the sayings and moralities of the Heathen, than the Life of CHRIST and Christians: The other two are merely verbal, conjectural, and most what chymical.

If they would more listen to a grand collection of experiments of all sorts, according to the Lord *Verulam's* advice, and totally cease from all manner of disputations; improving all other parts of Learning

ing to the utmost; It would be the only way in tract of time, to establish a true solid Science of Philosophy; till then, we may expect no considerable improvement, in those places, of real Science.

How uncertain are Physicians in their diagnosticks of Diseases? In so much, as so many Physicians, so many several judgements of the same numerical Disease; and all this for want of some pregnant Principles, grounded upon solid experiment, which in time would beget a demonstrable Science; without which, they erre in uncertainties, are mostwht eccentrical to the truth, and having no firm footing for want of a true basis of experiments, slide too and again amongst slippery notions.

To be so accurately skilful in Anatomy, as to be able to read a Lecture upon a cut finger, is not very necessary; to know the Veins, Arteries, Nerves, Muscles and Bones by name, that are cut, is more burdensom then useful to stretch our memories, with a great catalogue of simples, and to know so many hundreds or perhaps a thousand by their heads, both in their Infancy and Maturity, brings a Physician no nearer to know specificks, in order to the cure of Diseases.

To be deeply vers'd in the knowledg of the Diagnosticks of diseases, of all good and bad Symptomes, reckoned, by *Galen*, *Hippocrates*, &c. onely inable a man to be confident, and thereby to commit folly, by being too positive in his determinations of Life and Death; and so expose himself, and all that profess Physick, to an ignominious report amongst the vulgar.

The confidence of some Physicians herein, I have much admired, who trusting too much to their own skill, and being too credulous of the smiles of some
flattering

flattering, though uncertain, symptomes, do constantly (at least frequently) predict Life and Recovery, with such like expressions as these, *I wish I had a Lease of the Patients Life. My Life for his, He or she will recover. He may live many Years. He is safe, &c.* when the very next news we hear, is, The Patient's dead, the Lease is out, the Years are expired in one or two days time, and the Physician's Life and Credit is forfeited: Nay, and which is worse than all this, the Physician will keep the same share of confidence still, and be as forward in his predictions of Life and Health, and to the next Patient as before, though perhaps, yea frequently with as bad success.

I do think, that they esteem it below them, for the vulgar not to judge, but that they have all the dimensions of the Disease, or not to think, but that they know the height, depth, and length, and know the limits of its *exit*. And to settle this opinion in the vulgar, that they may be reputed Masters of their Profession, they put it to a venture, predict very confidently of Life or Death, which like a Lottery sometimes hits, and then their fame becomes wing'd amongst the ignorant sort of People, but if it miss, as it is very probable it may, yea frequently doth; then they huddle it up, and a little time wears it off; that it is forgot both by themselves and others: yet this confidence being so obvious cannot easily be smothered in all breasts, especially in those who are somewhat deeper sighted than the rest; to whom such vain confidence gives occasion to suspect, that either the Physician predicts Life to please the Patient and Friends about him, or that through a confident ignorance, he rapps at the prediction, and at a venture; because he would have it so, saith assuredly,

redly, his Life for his, he will Live and Recover: after all which, with many other circumstantial of his confidence, nothing is more frequent, than that the Patient dies. This makes Physicians a by-word amongst the vulgar, and gives occasion to other understanding Persons to conclude that Physick, as it is generally practiced, is nothing but a meer quack-ing, and a grand juggle, impos'd upon the vulgar, and others of inferior capacities; which gave occasion to one ingenious Person to say, That three grand Imposters of the World, in that Art, died in one Year; which was *Riverius*, Sir *Theodore Mayhern*, who the third was I know not.

Thus we see how injurious confident Physicians are to their own Art; how two or three days sometimes puts a period to their boasting in particular Patients; brings a Catastrophe upon all their fair predictions; blasts the deceitful hopes, they have lull'd the Patient and his Friends withal; and they live to prove themselves false Diviners: And all because they are too short-witted to consult the Oracles of Heaven, have not the right *Jacob's staff*, to take the true altitude of the Disease, nor what degrees it wants of the Horizon of Life; they are too short-sighted to view the Records of Heaven, and too inferior to know the Counsels of the most High; and therefore it is just with him to baffle them in their judgements, and confute them in their predictions.

How uncertain are the predictions by Urines, which are as readily changeable as any liquid juyce in the body. It hath indeed most what the same constituent principles as the Blood, viz. a Phlegm, a Sulphur, volatile Spirit or Salt, and a Salt *Marine*, with some resident *Faces*; so that sometimes the *Crisis* of the Blood, is indicated thereby. For as from a due pro-

proportionable mixture, of the constitutive Principles thereof, the Sulphur well tempering and tincturing the volatile Salt in the Phlegm, gives that curious citrine colour to healthful Urines; yet are they not always found, because so coloured, for we see that in any languishing Distempers, where some principal parts are much vitiated both in their native ferment, as also in the *Parenchyma* thereof, and yet the Urine keeps its natural colour: whence springs, as from one root, much deceitfulness in Urines, as to predict any thing of truth, as to the form of the Disease thereby; and any slight disorder of the last passages it runs through, will easily pervert the indication of all other primary parts, and this gives an other ground of mistakes, in the judgement upon Urines.

Some indications in some Diseases, may be had from the Urine, but they are inconsiderable, if compared with those, we either have from conference with the Patient, or the Patient's Messenger. The truth of it is, the World is so generally trained up, with the custom of bringing their Waters, and expecting a large Lecture of their Disease to be read thereon, which many Physicians make a shift to do, pumping with a few considerable previous Queries; Insomuch that the People look not upon him as a Physician of skill, who cannot read to them the Disease out of the Water: which if he can do, though it be but from what he hath already gathered from them, by the by, yet he then passeth for a man of judgement, though he is wiser than to think himself so upon that account.

Many People are so credulous, that they verily believe, he whom they repute a skilful Physician, doth certainly know the Disease and every punctilio thereof from the Water, and look upon his con-

jectures as Oracles from the Urinal, which they firmly believe he speaks, from his depth of judgement therein, thus the People are willingly deceived. And some Physicians, of this opinion, *Si Populus vult decipi, decipiat*, as the Learned Abbot, riding through a Country-Town, the vulgar People whom he passed by, desired his Blessing, to whom he replied very gravely, as if he had uttered a form of Benediction, *Si Populus vult decipi, decipiat*, stretching forth his hands after a solemn manner; which they received very thankfully, and perhaps did them as much good, as his Blessing would.

The gross mistakes that some are apt to commit, either accidentally or designedly, might methinks startle Physicians from being too positive in their predictions therefrom; as (for instance) a Maid mistook the Vinegar-bottle for her Mistresses water, carryed it very orderly to a Physician; who upon previous *Queries* gave his judgement very methodically, upon her Mistresses Infirmities: thus far all was pretty well, but the Maid returning, found her Mistresses water in the Urinal, in the same Window she had accidentally taken the Vinegar-bottle, away she carryed it to the Doctor, told him her mistake; but it's no matter, the Diseases he saw in the Vinegar-bottle, were somewhat alike with those in the Urinal-glass, and therefore the judgement he passed upon the Vinegar-bottle, was, for ought I know, as skilfully done as that upon the water it self: and perhaps more, for every ordinary Physician can make a shift, to discover some Maladies by the Patient's water, but to read a Lecture thereof out of a Vinegar-bottle, was indeed extraordinary.

But really, I could wish, Physicians were more serious and would deal more fairly above board, that
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in time they might unhinge the World from of this accustomed folly they have been by consent trained up in, that the people may no longer be nuzzled up in the expectation of a Physitians looking at the Phyllognomy of Diseases; or staring them in the Faces; through the Glafs of the Water, that henceforward they may not look upon them as Oracles, to divine Life and Death therefrom.

Also, I could heartily wish, they would consult, a more facil way of practice; such as by the efficacy thereof might prove more delightful to themselves, and more grateful to their Patients: which certainly cannot be better attempted, then by a serious Scrutiny into the natures of Concrets, into the ferments of the Blood, and humors, and Depravations thereof; also into the Sympathy and Antipathy of all medicinal ingredients, how the Vital or Animal spirits stand in agrément, or dissonance therewith. All which, and the rest, necessary to be known by a Physician, are best illustrated and confirmed by demonstrable experiments, which are the onely satisfactory *Criteria*s in all solid knowledge, the want of which makes Physicians too erratick, and inconstant in their Judgments.

A probable way propounded for the improvement of Experimental Philosophy.

TOWARDS a promoting an *Hypothesis* of experimental Philosophy (one large branch whereof would be this of Phyllick,) I think it would not be impertinent, yea perhaps necessary, to lay aside all or most of our Books, excepting such, as by some Judicious persons, might be reputed faithful, in their communication of experiments.

For they are the fancies and conceits, that are found in books, which makes the Readers erre, by determining their Judgments to this, or the other apprehension, which before was unbyassed, and might as well be informed of the truth, through matter of experiment, as not; whereas commonly in books Men have learned nothing more then to erre, to which they are, by natural propensity inclin'd, besides to see what large Volumes a man turnes over, before he can reap even but a small Harvest, of satisfactory knowledge; and that cheifly, because few there are, who busie themselves to write, but they have some Novelty, either in History, Theory, or Practice, to present the world with, yet they commonly do so wire-draw, and spin it out at length, with so many circumstantial, and often impertinent notions, that they fill up a volum, with that that they might have comprised in half a dozen pages: all the rest are meer Flourishes, and Appendices, which being tedious, few men will cumber their heads therewithal, and therefore in effect they signifie nothing.

Now to avoid all this, and to lay a groundwork for a more facile, unprejudiced understanding of things, whereby, at length, a solid body of natural Philosophy might be raised up, I would propound to the Judicious, this following Method.

First, That so many understanding persons, as might be judg'd meet for the purpose, should be imploy'd, to the reviewing of most books, which promise any thing towards the improvement of natural Philosophy, and the large stem thereof, Physick; laying aside all the rest, though under specious titles; as useles: out of which books they should make a collection of all experiments; and that faithfully, and nakedly, as to matter of fact, waving all the

Authors

Authors reflections, observations and disputations thereabout, excepting some choice compendious observations, and natural Principles, which might genuinely result therefrom, and should be noted in an Appendix with reference to the booke and page.

These choyce experiments, being sequestred from the impertinent Farraginous matter, which most books are stuffed with, should be Methodically digested into a book, which might be intituled, *Clavis Scientifica*, or *Clavis Philosophica*; and that to have an Alphabetical *Index* to point out the place of experiments, belonging to any remarkeable thing, together with the author and page of his book.

For many books are like the *Indies*, where there are indeed real treasures, but you must dig very deep and run over a great deal of wast barren ground, before you can find it: so that in these searches into the rich Mines of books, a man had need carry his *Virga Divinatoria*, (*viz.*) his Pensil to point out the most choyce observables.

This *Clavis Philosophica*, (consisting of the most select experiments compil'd together, with reference to the Author and page, where if any pleas'd they might readily view the Author's observations thereon) would spare the learned afterwards, abundance of labour and toil; for it should consist of several Volumes, to which a daily addition should be made, either of experiments confirming and seconding, the first already set down; or of collateral experiments, or lastly of such new experiments, as might constantly succeed upon Marrying actives upon passives.

To the supplying of which *Clavis Philosophica* that it might be well fraught with serviceable experiments of all sorts, there should some large Laboratory

or Laboratories be erected, fill'd with all manner of furnaces, for all kinds of purposes, in which many ingenious persons, with their under-operators, should be employed, to prosecute experiments of every kind, in Vegetables, Animals, and Minerals; who conferring one with another and comparing each others trials, should daily place them down in the *Clavis*, with much accuratenes in every circumstance: and after that to epitomize the experiment: so that he, who list may read it at large in all its dimensions, or view it in short.

As an additional to which, some other persons, whose *genius* bends that way, should improve a large piece of ground consisting of many Acres, with all manner of Trees, Shrubs, Plants, Flowers, Fruits &c. employing skilful Gardiners to plant, transplant, and dress them, keeping them in good order; in which garden should be Aviaries of several sorts, for all manner of Birds, foraign and domestick; also ponds for all sorts of Fish, Glass Bee-hives, and garden houses built at convenient distances, according to the best Architectonical Art, with all manner of glasses placed therein at proportionable distances, for reflections, refractions, and transmissions of *species*, and that for the improvement of dioptricks; also all manner of Dials, placed according to the several declinations of the Sun.

To which Garden, should adjoyn a large Forest with all manner of Cattle, with Herdsmen, Shepherds &c. Who should look to them and be able to give an account of the various occurrences.

From all which, should the most observables be collected, both from the sundry graftings, and inoculations, inarchings of one sort of fruit into another, whence are the great variety of fruits and flowers,

wers, many of which (perhaps) are such, as we never yet saw; out of which fruits, various sorts of potable liquors by fermentation, might be made, both pleasant and useful. Also observing the time and Method, of nurturing tender plant, both by hot beds, and several preparations of earths, for that purpose; also their time of gathering at their full vigour and maturity, and the seasonable drying of all or most remarkable plants, together with the observation of their efficacy, as simple Specificks, upon diseased persons; to which purpose, one house therein should be design'd for all infirme people to come to and that freely, onely for experiment sake, some ingenious persons being employed, for making diligent search into the peculiar operations of Specifical plants, upon the diseased; whilst others in the Laboratories are employed, to make Essences, Tinctures, Spirits, Extracts, Magisteries &c. therefrom; having the same liberty of making experiments thereof upon Sick Persons.

And in the Aviaries to observe the variety of Colours, Tones, and Food of Birds, with their manner of Propagations, observing the various process of nature, in the several stages thereof, from the *Punctum Saliens*, to the perfect formation; also by the dissection of many of them, to inquire which parts are the most essential and necessary Organs, for Vital functions; and in Ponds to observe the several sorts of the food of Fishes, and the manner of their increase, together with the various dissections of them, and also to make trials of the use of some of their select parts, in order to Medicinal use.

Also, observing the great variety of Cattle, their Food, Diseases and Cures, by Plants and the like: The manifold dissections whereof, would not a little

inform Anatomists ; also noting their remarkable excesses inward and outward, the stony concretions ingendred in any of their parts ; the tryal of the Medicinal use, of which parts, would very much add to the further inabling Physicians to cure Diseases more readily ; as that the blood of an He-Goat should certainly cure a Pleurilie, taken after such a manner as *Helmont* prescribes, which would be no small encouragement to a further prosecuting experiments of this nature ; seeing that so much blood of a Bull would strangle the Patient.

From all these, I say, such remarkable experiments should be noted down in the *Clavis*, as might be thought meet by the ingenuous Overseers and Contrivers ; and that in one Copy at large, with all additional circumstances, very faithfully set down ; in another more short Epitome barely describing the Essentials of the experiments.

This *Clavis*, thus furnished, and well fraught with Experiments of all sorts, would be as a Treasury or Store-house ; out of which afterwards (in tract of time) another Book should be writ, of the body of Natural Philosophy, Intituled *Philosophia Naturalis*, which should be wholly grounded upon the *Clavis*, and have all its observations, demonstrable from experiments, therein contained : this Book of Natural Philosophy, should be the genuine result and product of that of the *Clavis*.

A Digression

BUt here I shall take leave to digress a little to the advantage of the last recited end or purpose. Whilst therefore some are employed as abovesaid, other ingenious Scholars, maintained either in the same

same Colledge, belonging to the Physical Garden, or in the Colledges of the Universities (such I mean as have Fellowships to live upon) should in lieu of reading Logick, and Metaphylick Lectures to their Pupils, be employed in clubbing together their wits about the invention of an Universal Character; which, if rightly contrived, would be of general use in all Nations throughout the whole known World.

By the Universal Character, I mean such a Compendious Character, as being known in all parts abroad, should signifie the same thing amongst all Countries; so that all People that are skill'd therein, should in several parts of the World, read it, every one in their own Language. As for instance, The numerical Figures which are same in most Nations, are a Character of Numbers, which signifie the same thing, to all those forreign places they are us'd in, and every Nation reads them in their own Language. Thus 1. 2. 3. &c. are numerical Characters, which we, in *English*, read in these words, one, two, three, &c. the *Latins* read, *unus, duo tres, &c.* the *Greeks*, *ἓς, δύο, τρεῖς, &c.* the *French*, *uns, deux, trois*, the *Low-Dutch*, *een, twee, drie*; The *German*, *ein, zwey, drey*; The *Spaniard*, *uno, dos, tres*; The *Italian*, *uno, due, tre*; and *Portugals* read it, *hum, dous, trez*; and so all other Nations read them in their own Tongue, and that with difference of Dialects in the same Language, so that all these several, and many more sorts of People, understand the same thing, by these numerical Characters, though they read and expresse them, in their several Languages: Thus, Suppose this were the Character for a *Stone*, viz. □; The *Latins* would read it *Lapis*; The *Greeks*, *λίθος*; The *French*, *Pierre*; The *Low-Dutch*, *Steene*; The *German*, *Stein*; The *Italian*, *Pietra*; The *Spaniard*, *Piedra*; The

Portugues, *Pedra*; and so others differently, according to the varieties of Languages, though they all mean the same thing as we do by that we call a Stone, viz. a hard, compact, gritty body: So *LES* we in *English* might read *Crabs-Eyes*; The *Latins*, *Oculi* or *Lapides Cancrorum*; and so differently in other Languages.

We see the Chymists partly for vailing their Art from the ignorant, but chiefly for contracting the terms, have given forth a form of Characters, thereby expressing many terms and things of frequent use, in a short but general Character, which is read indifferently, but understood the same in all or most Languages, every Country reading them in their own Dialect, yet apprehend the same thing; though some few words are of a large extent, and pronounc'd muchwhat alike in most Languages, as for instance, *Elixir* is originally an *Arabick* word, but is muchwhat expressed the same both amongst the *Greeks*, *Latins*, *French*, *English*, &c. So *Amen*, is a word that runs through several Languages, the same, without any, or with little variation.

We find a great deal of facility, both in writing or reading of *Recipes* by this short way of Characters, for much may be expressed by Pen, or read not in a few words, but in a few Characters, which are less than words; yea, and which are as easily impressed in the mind (perhaps more) then words at length. Thus \odot , \triangle and φ , are more easily understood and more readily expressed by Pen, than Salt, Sulphur and Mercury, or than *Sal*, *Sulphur* & *Mercurius*, or the $\alpha\lambda\varsigma$, $\Theta\epsilon\acute{\iota}\omicron\nu$ & $\epsilon\rho\mu\acute{\eta}\varsigma$, or $\upsilon\delta\rho\alpha\rho\gamma\omega\epsilon\varsigma$, or than the words writ at length of any other Languages: So the Planets or Erratick Stars, are known by these single Characters, viz. \hbar γ δ \odot

☿ ♄ , The *Astronomers* with the vulgar, read them thus, Saturn, Jupiter, Mars, *Sol* or Sun, Venus, Mercury, *Luna* or the Moon; and thereby understand the Erratick Stars, in their Planetary Orbs: The Chymists reads them in the same words, but thereby understands the seven Metals, viz. Lead, Tin, Iron, Gold, Copper, Quicksilver, and Silver; and that because each Metal possesseth the predominancy of some one of the Planetary Orders, in the properties of Nature, to which they are ascribed by the cooperation of the septenary properties at Metallification, both as to *Pondus* and Tincture, *Id quod est inferius, est sicut id quod est superius*. The *Greeks* read the Planetary hours thus, Κεῖνος, Ζεὺς, Ἄρης, ἥλιος, Ἀρεστή, ἑρμῆς, καὶ μήνη, other Nations read them in their own Language, and yet all intend, and mean one and the same: So that they are a sort of Universal Characters of the Planets, and thereby are of general use to most Nations. So if the terms of any Art or Science, more generally express'd by a particular Character, would not a little both facilitate the understanding thereof, but also make it of more general use for other People of different Languages; the want of which, debars many other Nations from the knowledge of several Sciences, and ingenuous Arts; for words writ at length, are a platform of things, the Interpreters of and to the mind, the same are Characters, but in a more compendious form, and yet as significant of and to the mind (if not more) than written words.

The mind which receives the impressions of things is the same, and informs it self of the Signature of things, after the same manner as to it self; and that, whether in words (and those whether varied according to all Languages of the World) in figures, in
Cha-

Characters, Hieroglyphicks, or the like; for before the Building of *Babel*, all Languages were as one. What the Character of that Language was, if written we do not know: but surely as the Language so the Character was but one upon the whole face of the Earth.

And though this primitive Language hath lost its unity, by being involved in the Confusion; and multiplicity of Tongues; yet we see, that the humane mind, in the Apprehension of things, understands the same in all, the whole variety of Languages, yea and the various changes, of the different *Idioms* of each of those Languages: Onely the manner of expressing them and making them significant to others causeth the great difference, and that since the Confusion of Tongues.

Now onely the Primitive Christians, were again taught this Original Language in the School of *Pentecost*, when they were filled with the Spirit at the appearance of Cloven Tongues; for it is said they began to speak with other Tongues, and every man heard them speak in his own Language: (*viz.*) the *Parthians*, *Medes*, *Elamites*, *Mesopotamians*, those also in *India*, *Cappadocia*, *Pontus*, & *Asia*, *Phrygians*, *Pamphilians*, *Aegyptians*, *Romans*, *Cretes*, *Arabians*, and out of every Nation under Heaven; All which every man in his own Language, heard them speak the wonderful Workes of God.

Here was the greatest opening of the Universal Language of nature, that ever was since the Division of tongues, at the Rearing of *Babel*: For they were all (it's said) with one accord, in one Place, in one House. Now it's very probable that for avoyding of Confusion, one did but speak at once, when he had done then another &c. But every man heard them

them speak in his own Language : So that it is more then probable, they spoke in such an Universal Language, as was Significant to all ; and that the minds of the people of all Nations, were so opened , as they understood what was said : Even as if it had been spoken in their own Language , much what like an Universal Character , which every one might read in his own Language ; onely with this difference, that the tones of the Language of nature , was so opened at that time, in the mouths of the Apostles , as that they reached the minds of all people, in their several Languages.

Now if we would set our faces towards the building up of real Physiological knowledge, we should lay our heads together, to consult a more facile, and general way, of understanding one another, in several Languages, without that vast trouble of Learning the various Tongues themselves : Which to do , is in our power as God has given us a Rational understanding, whereby we may improve a more general way, in signifying our minds , and intentions one to another. But to speak again the Original Language of nature , is beyond our power ; and therefore we are to let that alone , until the time of the Restauration of all things.

In order therefore to the contriving of this Universal Character, those ingenious persons, or fellows of Colledges, who are set a part for this purpose, having no other Study, or Imployment to divert or hinder them, To whom I would propound these following Queries : First whether they (laying their heads together) could not (I say) consult the best and most Extensive Character, that might have no dependance , upon any particular manner of writing, peculiar to any particular Country, least thereby

by it should seem too much byass'd by that Language and so be somewhat estrang'd from the intended Universality; and thereby give cause to some people; to complain of Inequality and Injustice in the distribution thereof?

Secondly. Whether they should not search out so many Roots, or Radical Characters, as might express the most known and useful things in the world; as, *Man, Book, House, Stone, &c.* which should be orderly placed down in a Vocabulary: Which Radical Characters, should be writ pretty fair, and large, for a Reason, I shall afterwards speak of.

Thirdly. Whether these Characters should not be so contrived, (as to their form) as that they might indicate to the mind, the things they represent; which (perhaps) might not better be done, then by making (where occasion offers) the Character to Signaturize the thing represented, thereby becoming a short *Hieroglyphick* of the things understood: which kind of *Hieroglyphick* (how much it is to be used and improved) is to be left to the judicious contrivance of the Students herein: For all *Hieroglyphicks*, Emblems, Words &c. whet her writor expressed, are but Characters of intelligible things: Therefore those of them which carry a Signature of the things represented, are the soonest catcht hold of by the mind, and the easilyest apprehended; the reason is, because of their approximation to the *Identity* which is in the *Idea* of the things understood.

Fourthly. Whether, for the better understanding this Universal Character, the Syntax or Coherence thereof, could better be expressed, than by points in various places, and little dashes or strokes of different shapes, interwoven amongst the Characters? Whence proceeds the reason of the fairness and largeness (I hinted)

hinted) the Character should be (*viz.*) That the Additional points, and dashes, which represent the the *Syntax* of the Character, might also be discernable enough, though much less, than the Character it self. For which purpose, some few General and pithy Rules should be contrived for the institution of the *Syntax* thereof, which should be taught in all Languages for the education of Children therein, and that at the first, without any exceptions at all; because the giving many exceptions to Children too soon, in learning of any Language, hath prov'd no small *Remora* thereto, by burthening their Memories too soon, with Grammar-Rules.

Fifthly. What this universal Character should be? whether to be fram'd according to any known Character? Therefore whether the *Hebrew* or *Arabic* Character would not be of most general use, in the Fabrick hereof? Or, whether some new invented Character, might not be of a more universal extent? In the composition of which (in my apprehension) it should not be Alphabetical at all; and that for two reasons, first, Because there is no general concurrence of any of the Languages in an Alphabetical order, in as much as the denomination of the same thing, in several Languages, begins with different letters, according to their several Alphabets, Thus, that which we in *English* call a *Church*; the *Latins* call *Templum*, *ἱεὺς* the *Greeks*, the *French* *Eglise*, the *Low-Dutch* *Kercke*, the *German* *Kirche*, the *Spaniard* *Iglesia*, the *Italian* *Chiesa*, the *Portugal* *Tgroyla*, &c. Most of which begin with different Alphabetical Letters; so that it would be impossible to reconcile the universal to particular Alphabets.

The other reason, Why the universal Character should not be Alphabetical, is, because it would not

otherwise, be a Character, but a Language; which is a thing quite different from what I aim at: not to mention the tediousness of such an Alphabetical Character; seeing it is only required to be writ, and not to be spoken.

Sixthly. Also whether this Character, may not be perform'd by the Ten numerical Figures, and the various transposition of them; which would give variety enough, for many thousand words: for suppose the Alphabet of ours, or any other Language, to consist (as they do) of Twenty four Letters, there might out of the various transposition of those Letters be fram'd (if need were) ten thousand times ten thousand other words, besides those we frequently use; and that without any interfering or coincidence of words, whose great variety would, indeed, be indefinite (not to say infinite) and puzzle the greatest Arithmeticians in the World.

Now, if we did but consider the great variety the number seven doth produce, by the various transposition of its unites, would perhaps facilitate our understanding, how the various transposition of the *Decade*, might produce sufficient variety, to signify all things in the World.

In order to which, Let us consider the seven Tones or Notes in Musick, whether vocal or instrumental; it's all one, though they be numbred eight, yet in reality, they are but seven; and that because two of them are found to be flat, and therefore make up but one Note. These seven contain all the varieties of Tones in Musick; for these in three Cliffs (*viz.* in *F C* and *G*) make up the whole Scale of Musick, in as much as the Cliffs are but a repetition of the same Notes in different Keys, high or low: so that an *Octave* is but a *Unite* again, and therefore makes no alteration to the seven radical Notes. Now

Now suppose a *Monochord*, to be the Diameter of a Circle; That to be divided into seven parts, in the Semidiameter of which, one way is produc'd a *Diateffaron* or fourth; the other Semidiameter upward, a *Diapente* or Fifth; which Fifth is again divided into a *Disone*, or Third *major*, and a Third *minor*. From the beginning of the Diameter to the end of the lesser Third, is a *Hexachordon* or Sixth: but from *Unison*, or the beginning of the supposed Diameter, to the end or *Octave* thereof, is made a *Diapason* or Eighth: all which are reckoned Concords, so they be not Seconds or Sevenths to the immediately preceeding Note in the order of the Scale.

So that all Tones, whether Concords or Discords, are wrap'd up in those seven Notes, which are express'd by these almost Universal Characters, *viz.* *Sol, La, Mi, Fa, &c.* or by a more facile way, of the first seven Alphabetical Letters: Which Notes, though in number but seven, yet (I say) the transpositions thereof are so various, as that all the Composed Pieces of Musick, of Voyce or Instrument, in the whole World, hath not yet fathomed the depth of them; yea, and though a Hundred Masters in Musick, were set a part, to Compose all the variety they could in an Hundred Years, would still find a *plus ultra*, and some varieties they never hit on before; so indefinite is this Septenary Number. For it is a complete number, comprehending both the Creation, as also the Rest or Cessation from Creation; in it is contained the wrestling Wheel of the properties of Nature, and the Systeme of the Planetary Orbs, which are the bodies of those properties; the number of the Metals are therein comprised; also the number of the days of the Week, the Jubile and the Clymafterick are from it, multiplied

plied into its self: And Lastly, All Harmony is therein contained; though the chief Concords therein are the *Diatessaron*, *Diapente*, and *Diapason*; whence is the truth of that saying, *Tria sunt omnia*, yet the whole Scale of Musick is wrap'd up therein, as aforesaid.

Now if the Septenary, give this great variety, how much more shall the *Decade*, or number Ten give by the various transpositions thereof? Which number was called by the *Pythagoreans*, *Κόσμος*; *ἡραν*; *καὶ παρτέλεια*, The World, Heaven, and all Perfectness, thereby representing the large extensiveness thereof: it comprehends all number, for when we have numbred the Digits, if we could go further, we must begin again. This number (as the ingenious) Dr. *More*, in his Philosophical *Cabbala* observes, from the *Pythagorean Doctrine*) is made by scattering of the parts of four: Thus 1, 2, 3, 4, put together make Ten, *παρτέλεια*, τὸ πᾶν, The Universe; which was reputed such a secret amongst *Pythagoras* his Scholars, that it became a solemn Oath with them to swear by him that delivered to them the mysteries of the *Tetractys*, *Tetrad*, or number Four.

But besides the extensiveness of the *Decade*, in various transpositions thereof, it would also be more readily understood, by other Nations, in as much as it is generally known to most other People; for (if I mistake not) the *Chinenses* have the same Characters, for their Numbers, as we have now for distinction of them (as an Universal Character) from themselves, as representing numbers should be, by writing the one larger than the other.

Seventhly. Whether Children should not be trained up in the learning this Character from their infancy

cy. For let the Character it self be what the Contrivers please, whether in Figures or other form'd Characters of Lines, circular or angular, as they shall agree; yet this, whatever it be, is to be delivered to all School-Masters, to whom the instruction of Youth is committed, who are to teach them every day the signification of so many Characters as they find they are capable of; not burdening their memories with too many at a time, and those, of things most familiar, and of greatest use: so skillfully ordering their Method in teaching them, as that it may beget a kind of delight and pleasure in Children to read them.

And instead of asking them, What letter is that? to ask them What word is that? Which (in a while) by being accustomed thereto, they will readily answer (as they usually do,) to the name of such and such a letter: so that in time these Characters will easily be learnt, and take such deep impression, as they (in a while) will find a facile promptness to read them without hesitation.

Now for the promoting the understanding of which, they should neither learn to read, nor write any other Language whatsoever: not so much as their Mother Tongue. For, as to their own Language, we see, Children get it fast enough, by hearing others talk to them: Where if we observe, we may perceive a Notable method, hinted to us, in Childrens beginning to speak that Language, that is first taught them (*viz.*) That, though we speak to them, according to the *Syntax* and *Connexure* of our Language, yet they onely (at first) admit of Vocabulary words, and of those Monosyllables, the easiest, laying hold of those words where the most stress, and greatest *Emphasis* of a sentence appears, waving all Connective and

Concomitant termes, which we call by the name of *Adverbs, Prepositions, Conjunctions and Interjections*; singling out the significant words, without respect to *Case, gender, or Number in Nouns*: or *Mood, Tense, Number or Person in Verbs*. Which observation is no small hint to a method, both in the teaching of this Universal Character, as also for a Compendious instruction, in the teaching of Latine, or any other Language. For first, as to the Universal Character, it hints, that a bare Character is at first to be taught, without any variation, or respect whatever to the *Syntax*; or without the observation of any Rule whatsoever: Nakedly deciphering the Characters of the most usual words, and things, which most frequently occur in a Vocabulary, reserving others of less use till afterwards. And when Children are grown up, and fraught with a plentiful knowledge of these Characters; then to teach them to write nothing else, and withal to give them a few Rules, how to understand the Connexion, and *Syntax* thereof, which (as I hinted before) should be by some Additional points, and small dashes Variouſly plac'd: So that all the *Declensions of Nouns in Case, Gender, Number, and Person*, should be noted with a great deal of Succinctness.

For in the Character it self, there can be no *Declension* at all; onely it may by Additional Strokes, represent the differences of the *Case, Gender, and Number, of Nouns*. The *Genders* are to be but three, Masculine, Feminine, Neuter. Here all *Conjugations of Verbs* and special Rules of *Nouns* are to be omitted; the *Moods of Verbs* to be but three, (*viz.*) *Indicative* which is the Verb it self; the *Imperative*, and *Infinitive*, which should be noted distinctly; and *Tenses* to be but three, *viz. Present*,
Pre-

Preterperfect and Future Tense, Noted also with their distinct marks. The three *Concords* to be chiefly noted; the *Pronouns* to be set down in a smaller Character; the *Adverb, Conjunction, Preposition, Interjection* to be marked with different pricks. And some few pithy Rules should be given for the better construction of the Character, which might be comprized in short, without those tedious *Ambages* of the multitude of Grammatical Rules, ordinarily given for the teaching *Latine, Greek &c.* And as the aforesaid observation gives a hint, as to the method of the Universal Character: so likewise is it as a compendious instruction, for the teaching the *Latine*, or any other Language, where the first thing considerable, is a Vocabulary or Dictionary of most usual words; with a great number of which Children, or others (that intend the Learning the Language) are first to be well fraught, keeping as many of them in their memory, as they can well bear, before any Grammatical Rules of Construction be given.

Here I cannot but wonder, that the usual tedious Methods of teaching the *Latine* and other Tongues, have kept footing so long in these Northern parts, without further improvements, by more Compendious wayes: That we should be Six, Eight, or Ten Years in the Schools, to learn the *Latine*, and after that perhaps 5 6 or 7 Years at the Universities; at the end of which, many cannot manage a current discourse in *Latine*. They can make an Extraordinary good peice of *Latine*, can adorn it with all the tropes, figures, and floscul's of Elegance imaginable: They can correct the least mistake in any *Latine* Author, they meet with; and yet, let them come to make a familiar discourse in *Latine* (which is the noblest and most useful part thereof)

there they find themselves at a loss; and what they do upon these occasions, is with such a deal of force, and racking of their parts, as that, because they do it not glibly, in a current Style, therefore (whilst engag'd in such discourses) they seeme to have no small trouble upon them: Why, what's the Reason hereof? The main cause (as I apprehend) is this, that they are too much Grammatical: Attend more to Rules, then to a plenty of words, and Genuine propriety of speech, which to perform in a familiar Idiom, is certainly the most Noble and useful part of a Language, especially for a Traveller. For by beginning with, and dwelling long upon Grammar Rules, the true Method is inverted, as I shall shew afterwards.

The next Reason is, because we here in *England*, do not (no not in the Universities themselves) frequently manage familiar discourse in *Latine*; which without doubt is one great *Remora* in the way to a current Glibness, in the utterance of any Language: For we attain not to the knowledge of any Science, without a frequent accustoming, and familiarizing our selves with the Maxims thereof; nor to any degree of perfection, in any Manual artifice, without reiterate attempts, whereby at length, we make it become Habitual, and in a manner natural to us: So that nothing sooner begets a fluency in speech, then frequent familiar discourses therein.

The true Method of teaching the *Latine*, or other Languages in Schools, is most what inverted (as I said) and that thus we usually in Schooles begin to teach Children in the Accedence, and after that in Grammar Rules, onely learning them some few words by heart: and by this means, Children spend a long time in Learning the Rudiments of the

the *Latine* Tongue; which Rudiments so long as we begin with them, are properly call'd Rudiments, but in reallity of a true method, they are not Rudiments: But rather a compleat treasury of words in the memory: I should much sooner call them Rudiments, and that because they are first to be learnt. And therefore a true method, would indicate instead, of teaching Accedence and Grammar Rules, to begin onely with words, teaching Children every day so many words, and those at first such as are most frequently us'd; and that without any toil of the master further then asking them (after he has taught them) what is *Latine* for such a word, and what is *English* for such a *Latine* word, and then making Children one to examin another, and to shew them the way of finding out the *Latine* for *English* words, and *English* for *Latine* words in Vocabularies, or Dictionaries: And thus, by a kind of sport, to bring them on till they have got a competent number of words, which words they should alwayes be using (as occasion offers) one with another, though they know nothing at all as to the *Syntax* thereof; how to make them agree one with another: I say, a true method should proceed after the aforesaid manner.

Now, That I call a true Method, which is hinted most what in the natural instinct of Children, in the learning their native tongue, or any Language they are first taught; but we see plainly, that Children begin with words, which are significant to express what they mean, or what they would have, though they know nothing at all of the *Syntax* of those words, or of putting them into a form of speech. Thus if a Child want Beer, he cries beer (as wel as he can) which we understand as wel almost, as if he should have said, give me some beer; I want some beer;

beer; pray help me to some beer: so, if he say, Garden, or go Garden, we understand him, as well as if he had said, I would go into the Garden, or carry me into the Garden: though I say, the Child understands nothing of the Connection, or Congruence of words; yet he minds the significant words, while we in our minds make it into a sentence, and presently understand it as if he had spoken at large.

And although he only singles out significant simple words, and knows no method of Congruence or applying them one to another, so as to make a sentence of them; yet is he never at all the further of from a right method of Learning that Language, but comes on forward, and Learns the *Syntax*, and congruence of words, amongst themselves afterwards; and that without any Rules, but familiarity of speech, which in continuance of time, begets a current glib Language, so as he is able to express himself (when he comes to that ripeness of years) readily at a pretty round rate, and that without the cumber of any Grammatical Rules: Which are indeed the greatest (if not the Sole) obstacle of Learning a Language so as to speak it fluently.

As this Method is hinted secretly (though to an observing eye openly enough) from the natural instinct of Children, in Learning the first Language put to them: so in our instruction in the knowledge of any other Language, as *Latin*, or the like, we should in these secondary or artificial Languages, attend the same Method, as is (I say) hinted from the Natural: And that to begin with words, and to lay by (for a time) all the supposed Rudiments of Accidence and Grammar, stocking the Memory of the Scholars only with words, which he may use to speak to other Boys, as Children use their
their

their words to us, without any cognizance of the coherence of them; and that afterwards, when he comes to futable Years, its requisite he should know the *Syntax* of the Language, and then he should have some few pithy Rules given him; but such as should not be writ in *Latin*, but in his own familiar Language. For it hath been no small hinderance to Children, in their ready attaining to the knowledge of the *Latin* Tongue, to have their Rules in *Latin*, and those (many of them) frivolous and unnecessary, burdening their Memories with impertinencies, which (while they are getting their Rules by heart, and before they can understand them) a great part of their time is spent, wherein they might (if proceeded in, with a right Method) have arriv'd to a great degree of knowledge, in the expressing and ready speaking of the Language. So that the Rules thereof, hath been no less tedious, and perhaps more than the Language it self, if taught by a facile, natural, genuine way.

For by right, the Master that teacheth *Latin*, or any other Language, should (for the most part) speak nothing else but that Language he teacheth, and should suffer his Scholars to speak nothing else to him, or to each other, but *Latin*; and that though they be only such words, as whereby they can guess at each others meanings, as we guess at the meaning of Children, when they in short pronounce only a word (and that the most significant one) for a sentence: And thus they should do, though they speak false *Latin* very frequently; so as the Master speaking altogether or mostwhat to them in *Latin*, will in time (and that not long if compared with that time which is spent in the common way) so familiarize the Language to them, that they will need very few Rules.

For

For by how much the more natural any Language becomes to us, the less cognizance we have of Grammar-Rules.

And therefore it is, that Children Twelve Years old in other Countries, shall, and do speak *Latin* more familiarly and with abundance more facility, than we do at Twenty or above, though we have been train'd up in *Latin*-Schools, most of our young time. And all this proceeds from the wrong Method we take in the Learning the *Latin*, and that too chiefly from the puzzling intricacies of our *Latin* Grammars, which if we had never known, but followed the foresaid Method, we had not lost so much of our precious time in hunting after that Language. For they in other Countries, by the use of Vocabularies and Dictionaries, together with the frequent custom of speaking the Language, become furnished with a great stock of significant words, which being compos'd by some few general Rules, inables them in a little time both to understand and speak the *Latin* Tongue very fluently.

Thus also the Universal-Character (we are speaking of) should be plac'd down in Vocabularies or Dictionaries, with the signification thereof in every particular Language, which should be taught in all Schools, in every Nation, viz first to be read chiefly and particularly in the native Language of the place, and if any after the through understanding it in their own Language, should be desirous thereof, may be taught to read it into *Latin*, *Greek*, or what Tongue they please.

And for the making it Universal, it should be so ordered, as that no other form of Writing be at all followed, not so much as to Write their own Native Language, any other wayes than by this Character,
and

and that least any other manner of Writing should gain ground, and thereby cause a deficiency in the general Character; so that let a man learn as many Languages as he pleaseth, yet if he would express any thing in any of these Languages he should do it by the Character, and by that he may as well express what he hath of experiment or observation to communicate to the World, from his own native Language, as from any other whatever.

Also all Books of publick use, and of general instruction, should be writ or translated in this Character, and Children should be train'd up in no other from their Child-hood. Thus (in a few years) the whole Scean of Writings, I mean such as are most proper for the use of Mankind, would be transpos'd, and put into a new form of this Universal Character; so that one Nation may read the various Transactions, and rare Inventions of each other, in their own Language, without an Interpreter or Translator of one Language into another, which would beget a community of correspondence, even betwixt the remotest of Kingdomes.

And by the foresaid Method, generally observ'd, and that by publick Edict of all Princes within their Dominions, Children and others, would make such a proficiency in this new way of understanding each other by one simple Universal Character, as that the World, once in a Dozen or Twenty Years, would grow weary of writing their own Language, in letters and words at length, and finding such a facile ready way of writing by this Character, would readily close therewith, and willingly make it their sole form of writing.

The benefit and profit of this Universal Character to Mankind, would be no less Universal than the Chrracter

Character it self; for by this means, Princes might readily understand the Policies of forreign States; and if good, make them presidents to themselves: Philosophers (hereby) might have a ready intelligence of the most remarkable occurrences and Philosophick Transactions throughout the World, to the great improvement of experimental Physiolygy. Also Mechanicks might improve their ingenuity, by having fair hints of ingenious contrivances from abroad. Mathematicks might also receive no less advantage hereby both by observing from abroad shorter Rules in the two Pillars thereof, *viz.* Arithmetick and Geometrie; as also in the branches thereon depending, *viz.* Astronomy, Dialling, Geography, Navigation, Architecture, Mensuration, &c. Physicians also might improve their skill, by having new Methods and rare observations communicated to them from all parts of the World; in order to the more successful Cure of Diseases. Merchants (hereby) might Traffique more readily, in all forreign parts of the known World, and that without having their Letters of Advice or Bills of Exchange Translated, by an Interpreter, out of one Language into another, or of being confin'd to have one of their own Language imploy'd as their Factor.

And (to conclude) all liberal Sciences, Ingenuous Arts, and thriving Manufactures, with Mechanical inventions, would receive no small improvement by this way of communication, through the help of the Universal Character; and by observations in Physiological Essays, from all parts abroad, the Structure of a body of true Genuine Philosophy, might (in a little time) be raised, to the great use, and benefit of mankind in all sorts of useful learning, both speculative, and practick. So that (thereby) in a few years,

years, more might be done, as to the Compleating thereof, then hath been in whole Centuries of years before.

And here concluding this Digression, I re-assume my first intended matter, and further assert, *That*——

THus would Physiology be advanced in every part and branch thereof, becoming more facile, certain, and grateful, by being grounded upon experiments, then by any other conjectural *Hypothesis*; though as I said, it is but *Scientia naturalis à posteriori*, being as far (or more) short of that intuitive knowledge which *Adam* had in Paradise, as conjectural *Hypothesis* is of it; yet is this very acceptable, because it joyns issue with our Senses, whence we now, after a Preposterous manner, assume most of our knowledge of natural things.

A considerable part of this Book of *Philosophia Naturalis*, would be spent in the Physical or Medical Science: By which we should know, what concretis, how us'd, and by what means they become helpful for the reliefe of our infirm and diseased Bodies; in which that improvement made in the Laboratories by various preparations and trials thereof upon sick persons, would be of great importance.

And this brings me to the third and last thing, I propounded to my self, to discourse of, *viz.* to lignifie the use and efficacy of Chymical remedies; I mean, how much more assistance nature hath by the help of Chymical Medicines in order to the cure of diseases, then by the vulgar Shop-preparations; and here, me thinks, the Cabinets of natures rarities are opened and by this noble Art we are let into the grand Mysteries, and choyce Secrets of medicinal Preparations, which, being seperated from their
terrene

terrene *Faces*, and corrected from their annexed vitulencies, penetrate into the very intimate recesses and secret *Meanders* of the Body, helping nature at every turn, both to manifest what is useful by solution, incision and absterlion of the peccant *Sordes*; as also by fortifying the vital powers and functions, and that corroboration, and restauration of the vital Principals.

No Ingenious Person, can longer satisfie himself, in the common practice of the *Galenical* Physick; when he once begins to reflect upon the uncertainty of the Method, and unsuccessfulness of his Curing Diseases; especially when he comes to consider the reasons thereof, *viz.* the rawness, and incongruity of the dispensatory Preparations, the Farraiginous mixtures whereof, render them less effectual, then if they were more simple; and puts the young practitioner to a great loss (whilst the elder, (and therefore accounted the more experienced Physician) jogs on right or wrong, according to his methodical rules of Art) for when he expects, as wel for his credit sake, as his desire of doing good, some great Cures, he finds nothing considerable done.

And this gives cause to many Industrious searching Physitians, now of late, to begin to throw off this *Galenical* yolk, and fall to work themselves, making some neat Preparations according to the Chymical Art, for their own practice; by the efficacy of which, they are encouraged to proceed further, to the Preparation of more noble *Arcana*: which they must do, whilst they are young, other wise when they grow old, they either become too lazie, to begin to work, or too much settled upon their Lees; then they think themselves to old, to enter into the Chmycal *Matrix*, to be born Philosophers by the fire.

The Chymical Preparations have these following
advan-

advantages of the Shop-Medicines; first, they are commonly much less in bulk than the other are, and therefore they less offend the Patient in taking them. What nauseating Potions are frequently prescribed (not to say that they are in their taste, inferior to Horse-Drenches) which are apt to make the stomachs of some, who have taken thereof, even at the sight of the next Potion to Vomit; whereas a few drops of a Spagyricall Liquor, given in a proper Vehicle, or a Mineral Powder given in a few grains (which in some Preparations hath some taste, in others none) operates effectually enough, according to the intention of the Physician.

2. Chymical Medicines (if rightly prepared) are less dangerous than the *Galenical*. I shall not here vindicate the confident boastings of some quacking Pretenders to Chymistry, who presume to cure all Diseases with some secret Powder, Oyl, or the like; which (when known) is but a meer trifle, and scarce worthy the name of a genuine Chymical Preparation: and yet (forsooth) these Medicasters boast themselves (though you shall scarce hear it from any of their Patients) what great wonders they can do, vilifying all others that are more modest than themselves, and yet are Possessors of more noble Medicines.

I am not ignorant, how the *Galenists* have designedly insinuated into the Vulgar, the great danger (as I said before) of Chymical Medicines, which hath been no small *Remora* to the progress of Chymical Physicians; till their unwearied diligence hath, with time, mostwath worn off that apprehension of danger: and they now begin to observe by ocular demonstration, the great efficacy, together with the safety of Spagyricall Remedies.

For where the *Galenists* in their Dispensatories ; ends, there the Chymical Physician begins, both to correct what they have done, by making their compositions more homogeneous; and to proceed further to what they have not done: witness the elaborate Chymical Animadversions on the *Augustane* Dispensatory, by the ingenious *Swelfer*; who undoubtedly doth correct most demonstrably the errors of the vulgar *Galenical* Preparations, shewing very evidently their incongruous and farraginous mixtures ; and besides adds other dexterous Preparations, both Vegetable, Animal and Mineral, which they have not. In whose Book of Animadversions, with his *Mantissa Hermetica*, and *Appendix* thereto, the Reader may view plainly (as in a glass) the errors of the received opinions of the vulgar Practice of Physick.

3. The Chymical Remedies are more purified and refined from their terrene feculencies, than the *Galenical* ; for in Decoctions, Syrups, Conserves, Electuaries, *Lobochs*, and some other Shop-Preparations, there are but very small separations of the terrestrial *Feces*, little depurations made : as for Decoctions, either the *Menstruum*, which commonly is water (perhaps with the addition of some Wine) is not proper for extracting the virtues of the Ingredients, or by too much boiling, they let the volatile (and therefore most effectual) parts fly away, so that the virtues of the Concretes, are not sufficiently hereby extricated from their bodily *Compagne* ; nor by pounding Vegetables, to make Conserves thereof, with the addition of Sugar ; nor the like addition of Sugar to the juyces thereof, to make Syrups ; nor the additions of several *Species* together, with Sugar and Honey for *Lobochs* and Electuaries ; I say, None of these do suffer any considerable separation, of the
pure

pure from the impure : but the *Sanguis, cruor & ster-*
cus of Vegetables, the good and bad are all jumbled
 together ; and therefore Noble *Helmont* saith, in his
Pharmacopœia, Error Scholarum fuit, succos Her-
barum, cum suo Parenchymate, Fermento prius non
subigere, antequam optimarum partium selectio sit
possibilis ; Who (observing the frequent Preparations
 of Vegetables into Syrups, Conserves, and the like,
 without any separation of parts) tells us, That the
 error thereof, is for want of the knowledge of Fer-
 mentations, and thereby of due separations of the
 pure from the impure ; and therefore also he saith
 (in another place to the same purpose) *Discant Tyro-*
nes, sanguinem à cruore & parenchymate plantarum
distinguere, & separare, si quicquam laude dignum e-
gisse per simplicia meditentur : so that, unless there be
 some peculiar separations of earthly feculencies, and
 other impurities (which must be done by previous
 Fermentations in the Preparations of Vegetables)
 we can scarce reap the Essential virtues thereof. Now
 in Syrups, Conserves, Electuaries, &c. there are
 made no previous Fermentations, or putrefactions ;
 and so consequently no separations of pure from im-
 pure, *Abque reseratione clausarum virinum sive vitæ*
radice, ac participatione, emendatione defectuum, cru-
ditatum, excrementorum, & potestatum violenta-
rum.

Indeed Syrups and Conserves, do by keeping, work
 and ferment ; as we see that Syrups (whilst work-
 ing) being close shut up in glass-bottles, frequently
 break them, though never so strong ; Conserves espe-
 cially, if made with powder'd Sugar, and kept one
 or two years (not with Loaf-Sugar which is com-
 monly boyl'd up, with a *Lixivium* of *Calx vive*)
 do Ferment, whereby the *Compage* of the Vegeta-

ble becomes opened, out of which (by a slight artifice) I sometimes prepare a curious Spirit, as of Roses, or Rosemary Flowers, which retains the taste and virtue of the *Species*, whence they were extracted.

4. Chymical Remedies are frequently more effectual in their operation than the *Galenical*. By Chymical Medicines, I do not mean such, as every ordinary bragging Chymist exposeth to Sale, who themselves are (through their vain empty boasts) no otherwise than a reproach to the noble Art of Chymistry; and their Preparations spurious, in comparison to the genuine products of the *Spagyric* Art: but such I call Chymical Medicines (whose efficacy I am treating of) as are made by a skilful Artist, who by continued experience, knows how to correct things corrigible; and how, by every succeeding Preparation, to further enrich his Medicines, with more noble virtues, by making exquisite depurations and gradual separations. These will therefore more readily penetrate *in intimos natura thalamos*, into the more inward recesses of the Digestions, and Fabrick of the vital and animal Spirits; and thereby become more capable of rectifying the enormities of those nimble Agents, who sit at the stern of the Digestions, and govern the vital and animal functions, much more than those clogging Medicines of Syrups, Conserves, Electuaries, *Lohochs*, Potions, &c. Which commonly are either rejected as nauseating to the Digestions; or carryed off by scidge as cumberfom, by reason of the unseparated Heterogeneities; or else stuff and clog the vessels, causing obstructions, and thence enormous Flatulencies.

*Concerning the constitutive Principles of all Concretes,
whether Vegetable, Animal, or Mineral.*

BESIDES all which, the Preparation of Chymical Medicines, gives a diligent Searcher much insight into the Principles of Natural Philosophy; which first insinuated the *Triaprima* of the Philosophers, viz. *Sal, Sulphur, & Mercurius*, to be Principles of all things; and that because they found in the *Analysis* of Bodies by the fire, that they were reducible to some, or all of those three: for in reduction of Metals and Minerals to their first Principles, as they suppos'd, they found by this Art, that they were separable into a Sulphur or Oyl, which was the *Hematina Metallorum*, retaining the true tincture of the Metal; and into a Mercury, which in the Mineral Kingdom is current Quicksilver; and the key to this separation they found to be in a Mineral Salt, which also needed reduction by Art, to its primitive simplicity and graduation to its greatest activity.

They find also that Vegetables and Animals were, by the Pyrotecnical Art separable into a Sulphur, viz. into an Oyl, or in Vegetables (by Fermentation) into a vinous Spirit; which is the same thing with an Essential Oyl, saving the different determination it receives from Fermentation: also into a Salt, and that either fixt or volatile; for in the Concrete they are the same, owing their difference to no other than to the force of fire; and lastly, into a Mercury, which is their Phlegm, or watery parts, separable by fire, or otherwise, by the exiccating *Blas*s of the Air.

Now some of our modern Chymical Philosophers (as the ingenious Dr. *Willis*) multiply these three in-

to five Principles, which in effect are but the three first still; the five, which he reckons Bodies, are most what separable into rare Spirit, Oyl, Salt, Water and Earth; if by Spirit he means the vinous, got by Fermentation, What difference is there, for both are Sulphurs, both take flame and burn alike, only the one is made by Fermentation, the other not; and being they have both the same Essential properties of Flammability, What should hinder them from being Sulphurs? But if he mean by Spirit, the volatile saline Spirit, which is not combustible: This volatile Spirit, by frequent rectification, may be brought into the form of a volatile Salt, whose Vehicle was water, Phlegm or Mercury; but the body of volatile Salt is Salt and therefore should not be accounted as another Principle. As for that Principle which he calls Earth, if a Concrete may be volatiliz'd and brought over the helm, without any resident *Caput mort.*, as the Chymical *Adepti* can perform, Then (I pray) what becomes of his six Principles, he calls Earth? So that in the conclusion, we shall find his five to be reducible into the first three.

These three Principles of *Sal*, *Sulphur*, and *Mercury*, into which many Concretes are reducible, by the *Analysis* of the fire, are again reducible into two, and those are *Aqua & Semen*, Water and Seed; which are the primitive constituent Principles of all Bodies in the *Mundane Systeme*, to which two, the *Sal*, *Sulphur*, and *Mercury* are but posteriour products, or offsprings of that double Original: Yea, whatever parts, or supposed simple Principles, any sort of Bodies are reducible into, they are but the sequels or after-products (variously extorted by force of fire) of those two real Principles, Water and Seed.

Water we suppose (and perhaps may prove) to be

be the first matter of all visible Bodies. It is the true subject matter of all Concretes, which we thus prove, *viz.* That is the first material Principle of all Bodies, into which they are ultimately, by a natural or artificial *Analysis* reducible; but all Bodies are ultimately, by a natural or artificial *Analysis* reducible into Water; *Ergo*, Water is the first material Principle of all Bodies. The *Major* is plain, and granted on all hands; for the *Aristotelians* (who plac'd the Principles of all things, to be in the quaternary of Elements) did it, because they supposed (but could not prove) that all Bodies were reducible into those four Elements, *viz.* of Fire, Air, Water and Earth: so in like manner the Hermetical Philosophers, in their weaving all Concretes, out of their *Tria prima* of *Sal*, *Sulphur*, and *Mercury*, did suppose them to be the first Principles; because many Bodies by the artifice of the fire, were reducible into somewhat analogous thereto. And so those who encrease those three into five Principles, do it because some Concretes are resolvable by fire into those five distinguishable parts; which indeed are rather new products of the fire, than genuine resolutions into their first Principles.

The *Minor* thereof rests to be proved, *viz.* That all Bodies are ultimately reducible into Water, by Art or Nature. That it may be done by Art, I shall demonstrate from an infallible Experiment of the most profound Chymical Philosopher, *Van Helmont*, who in his Tractate, Entituled *Elementa*, saith thus, *Nostra Mechanica mihi patefecit, omne corpus (puta saxum) Lapidem, Gemmam, Silicem, Arenam, Marcasitam, &c. transmutari in Salem actualem; equi ponderantem suo corpori; unde factus est; & quod iste Sal aliquoties, cohobatus, cum Sale circulato Paracelsi, suam omnino fixitatem amittat, tandem transmute-*

tar in liquorem, qui etiam tandem in aquam inspidam transit: & quod ista aqua equiponderet, Sali suo, unde manavit, viz. That by his liquor *Alkabeft* (for so I understand his words *Mechanica nostra*) every Body, whether Stones, Gems, Flints, Sand, Marcasites, Earth, Brick, Glass, *Calx*, Sulphur, &c. might be transmuted into an actual Salt, of the same weight with the body it was derived from, or was made from; and that Salt being cohobated sometimes with *Paracelsus* his *Sal circulatum*, would lose all its fixity, and be transmuted into a liquor, which at length would be turned into an inspid water, of equal weight with the Salt whence it came.

He saith further, *Plantam, carnes, ossa, pisces & quicquid simile est, novi redigere in mern sua Tria, unde postmodum aquam inspidam confeci; metallum autem propter sui seminis anaticam corruptionem, et arena (quellum) difficilime in salem rediguntur; viz.* by the same grand Solvent liquor, he knew how to reduce any plant, Flesh, Bones, Fish, and the like into their three first Principles, which also were further reducible, yea actually (by him) reduc'd into an inspid water: but the reduction of a Metal was difficult, by reason of the equal mixture of its Seed, and so also of the reduction of Sand.

Further he saith, *Terra originalis sive arena, tam arti quam natura resistat, nec queat ullis adminiculis a primævi sui constantia recedere (unico duntaxat Gebenne artificialis igni excepto,) quo arena sal fit, ac tandem aqua; quia vim habet agendi super sublimaria quævis absq; reactione; viz.:* that the original Earth or Sand (*arena, Quellum*) resists both art and nature, as to its reduction; nor can it, by any means recede from it Primitive constancy, unless by the onely artificial fire of the *Alkabeft*, call'd by the name

name of *Gehenna*: by which Sand, is made Salt, and at length converted into water, because this solvent hath power to act upon all sublunary bodies, and that without any reaction of bodies upon it.

By all which, we may see, that all bodies whatsoever, are by art so transmutable, as that at length they may be reduced into their simple Element of water; which if it were not their first material Principle, they could not ultimately be resolv'd thereinto; for both Vegetables, Animals, and Minerals, are by the natural *Analysis* of the *alkalhest*, at last reducible into common water. Concerning Vegetables he saith, *novi aquam, cujus medio omnia vegetabilia in succum distillabilem sine ullâ sui in fundo vitri residentia commutantur, qui succus adjuncto alkali totus in aquam transit inspidam*. This is perform'd by the same Solvent-liquor as the other was; so that Vegetables by the powerful operation of this liquor are changed into a distillable Juyce, which will pass over the helm, without any *Feces* or *Caput mort* left behind: which distilled Juyce being re-distilled from *Alkalies*, becomes totally reduced into a simple Elemental water.

As to Animals, he saith, he reduc'd Flesh, Bones, Fish and the like into an inspid water; and as to Minerals or Metals the same is done, though with more difficulty. *Paracelsus* tells us that his *Circulatum majus*, which he also calls *acetum acerrimum metallicum*, & *primarius ens liquidum Mercurii*, if digested upon any of the Metals, doth reduce them to any oyl, or supernatant fat, tintured according to the property of the Metal; by which, Metals are deducible into a magistery. Now *Helmont* saith; *Olea & pinguedines per ignem separata; adjecto paucis sale Alkali, saponis naturam assumunt, atq; in aquam*

aquam elementalem abeant viz. That oyls or fats, separated by fire, by the addition of a little *Alkali* becomes Saponary, and afterwards passeth into a simple Elemental water. So that whether minerals and metals be by the grand liquor resolvable into a salt or into an oyl, they are either way (at length) reducible into a water.

He tells us, that the most rectified spirit of wine (which *istotus cremabilis*) by the intimate touch of salt of Tartar, may be transmuted into an incom-bustible salt, to the quantity of the sixteenth part of the whole; the rest (*viz.* 15 parts) becomes a simple Elementary water: and further, that every distilled Oyl is changeable into a salt, *Deposito semine pinguedinis*, and that salt *per adjuncta*, is convertible into water.

Carboquercus (inquit *Helmontius*) *aquâ quadam, tepore balnei, spatio tridui, versus est in duos liquores diaphanos, fundo & colore varios: Quibus distillatis nil facum remansit; at ambo equiponderabant massæ carbonis; liquor dissolvens manet in fundo paris ponderis, sibi & virium;* by which, the excellency of the *Menstruum*, and the reducibility of Compound bodies in to clear liquors, and those again (by other additions) into simple water, is evident; *viz.* that a charr'd coale of Oak should (by being digested with this solvent, in the heat of a *Balneum* for the space of three dayes) be turned into two diaphanous clear liquors, distinguishable in colour and consistence, which being distill'd, should leave no *Faces* behind, but should be equal in weight to the Coal it self, I say, this is very remarkable towards the evincing the truth of the simplieity of the material Elementaryness of Concrets.

For as it is in this, so also is it in other reductions,
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by the same solvent; What becomes of the Salt, Sulphur, Spirit, and earth? If these were real Principles, they would not be convertible one into another; neither would they be reducible into something more simple than themselves: in as much, as it is essential for Principles to be Primary, and to be the last in reduction. What becomes of the Spirit, one of the Principals of the Moderne Chymical Philosophers? which whether it be Vinous, got by Fermentation; or Saline, got by distillation, yet is it really convertible into Salt: witness the *Offa* from Spirit of Wine, and Spirit of Urine; the *Sal Alkali* made out of spirit of Wine which before was Flagrable, but being chang'd into a Salt hath lost that; and lastly the rectification of Volatile Urinous Spirits, whether of plants or Animals, until they distil or Coagulate into the very body of Salt.

What becomes of Sulphur, or Oyl another supposed Principle; for Sulphurs are convertible into Salts, as I have seen in an experimental process, too tedious here to be related; and *Helmont* saith *Salia aromatum ex eorum oleis facta, primi entis illorum vices subeunt*; and that Oyl of Cinnamon if united to its own *Alkali*, by an artificial and secret circulation for the space of three months, without any water, will be totally changed into a volatile Salt.

Also what becomes of Salt, another main Principle of both antient, and Modern Chymists? For whether it be fixt, or Volatile, neither of them is an ultimate, and so consequently no primary Principle; in the concrete it is neither volatile, nor fixt, but made so by Fermentations or force of Fire; for in all simple distillations of Vegetables, without previous putrefaction, there alwaies remains an *Alkali* or Salt, besides the Volatile Salt which ariseth by distillation

lation : So in the actual Flagration or Calcination of Vegetables, the Salt catcheth hold of the Sulphur, and both become fixt together into an *Alkali* ; which Assertion *viz.* that part of the Sulphur in the actual force of the Fire, is fixt with the Salt into an *Alkali* is apparent from the Saponariness of every *Alkali* , whether of Tartar or any dried Vegetable.

So that Salts, as they lie woven up with the Sulphur, in the Texture of the Concrete, are (as I said,) neither fixt, nor volatile ; bur in the mutual imbraces of each other, become pregnant with the Medicinal Vertues, Odours, Sapours, &c. proper to the Plant : and from different operations of fire, and ferments thereon, doth proceed both the Volatility and fixity of the Salt, their mutability of one into another, and Separation each from other.

Now both these are ultimately reducible into Mercury, or water, (which I look upon as *Synonyma* ; for *Helmont* saith, *Omne oleum distillatum, in saleem est mutabile, & in aquam per adjuncta* ; so that, into neither of them are bodies, by a genuine *Analysis*, ultimately reducible, and therefore they are constitutive Principles of things.

Lastly, what will become of earth, that first Principle of the Modern Chymists, and fourth of the *Aristotelians* ? And although those who contend for five Principles, because Vegetables and Animals, are by a common *Analysis* of the fire, separable into so many distinguishable parts *viz.* an Oyl, Spirit, Salt, Phlegm, and Earth (I say) though they do find, after the separation of the first four, an other part, as a feculent dross of all the rest, which they call earth ; yet do we deny the Separation of these parts from a concret by force of fire, to be any true *Analysis*, or proper way of taking bodies in pieces.

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And therefore it is no genuine reduction thereof, into their primary Principles; but onely a forcing the parts asunder, by violence of fire: so that, being put upon the Rack, if they make any confession of their first parents, its onely extorsive. Also the *basis* of *Aristotle's Elements* falls, *imo ruit totum quaternarium elementorum, præter aquam*; for if we strictly examine what earth is, we shall find, that it enters not the composition of any body as a primary constitutive Ingredient thereof: and that, because if we search into the great variety of Earths, we may observe them all to be but fruits, or products of the primitive Principle (*Water*;) except hence that *Arena* (*Quellen, terra virginalis*) which never enters into the composition of any body, *quoad generationem*; indeed artificially it enters the composition of Glafs, of Brick, cement &c. but that is *sine semine prævio*.

And that the several sorts of Earth, are various coagulations of water, according to the difference of the Fracedinous seeds, dispersed, and implanted therein; and that they are no less products of water, then Mineral Salts, middle Minerals, Stones, and Metalline Bodies are, all which receive a Specificall determination from the difference of the Fermental Seeds, Is (I say demonstrable by granting the veracity of *Helmont's* experiment aforesaid, *viz.* that all these Earths, Stones, Marcasites, Minerals &c. are ultimately reducible into water, by his grand Solvent, the *Alkalest*; and that without any residence or *Faces* at all: so that, if earth were a permanent Principle, it would be so as long as bodies are bodies and would alwayes remain earth after the reduction of the concrete into Elements.

As earth is no Element, so neither doth air enter, as such, into the composition of Bodies; and though
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its true, that air is both useful, and necessary for Vegetation, and Animation, without which neither do plants grow, nor Animals live: yet is it onely *respiraculum vite*, promoting in Animals, both circulation and volatization of the Blood, and helps every part to perform the motion proper thereunto, inasmuch as we cannot go to stoole without the help thereof, compressing the muscles of the *Abdomen*, and so of Urine, and the like; but still it enters not the composition of any body, as an Elementary Ingredient thereof. Nor is any body ultimately resolvable thereinto; for though there be a *status* arising usually from the Enormities of the digestions, yet that is quite another thing then air.

And as neither earth nor air, so neither fire enters the composition of any concrete; for though there be heat, and consequently a kind of fire, in the body of Animals: yet that is no other than a product of Vital Fermentation, and no radical Principle; and therefore *Paracelsus* was to be laughed at, who in his Tractate *De separatione Elementorum*, teacheth the separation of the Element of fire, and out of it again a new separation of Elements. For if I should, with him, suppose an Element of fire, yet if that be further reducible, it forthwith looseth both the name and nature of an Element: and although he, and other *Hermetical Philosophers*, tell us of the separation of *Elementum ignis de vitriolo Veneris*, yet by that we must onely understand, the *Sulphur* separated from the Vitriol of Copper, which *Sulphur*, as well as that of *Antimony &c.* they call fires, because, they have a power of maturing, and digesting the Mercurial Crudities, into a penetrative tinging *Elixir*.

Thus we see, that neither the Ternary of Principles,
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of *Hermetical* Philosophers, nor the quaternary of the *Peripateticks*, nor yet quinary of the Modern Philosophers, are sufficient to be accounted real radical Principles, into which all Concretes should ultimately be reducible; because they themselves are yet remigrable into a more simple Element: and therefore (*ipso facto*) forfeit the Prerogative of primary Principles.

The very hinge of the matter now is, What ^{ml} we believe the truth of *Helmont's* Experiments ^{art} ~~of~~ ^{to}. As for my own particular, I do not pretend the possession of that great Liquor, though I have several Preparations (I hope) in the way towards it; but methinks I cannot suspect the veracity of so Noble and Grave a Philosopher, in matter of fact, as to the Experiments he hath made by that Solvent, though I should never live to enjoy it. I cannot but think it dissonant to reason, that he who wrought Thirty Years with his own hands in Chymical Experiments, that he might not take things upon trust, nor *Jurare in verba Magistri*, should (whil't on the verge of the Grave, in his old Age) leave figments and palpable Lies, in matter of fact to the World.

Besides, he seems to be consistent with himself, in matter of Experiments; in which he is abundantly more plentiful than ever *Paracelsus* was, though he also had the knowledge of that Liquor, from some of the *Arabian* Philosophers: but, I am apt to believe he did not know half the extent of its use. *Geber* and others of the *Arabian* Philosophers, so also *Lully*, was possessors of this secret *Menstruum*, as may be seen in his *Theorica*; where he tells us that he coagulated Quicksilver into a fixt Powder, '*Es nemo scrivit modum, salvâ Regiâ Majestate*. Also a Countryman of our own, an *Anonymus*, who (if yet

yet living) hath it. It's not many years since he was in England; some of whose Manuscripts I have by me, who certainly gives more light to the Writings of another of our Country-men, viz. Ripley; also to Count Trevisan, and other Hermetical Philosophers, than ever yet was done.

The greatest light Helmont gives, in order to the Fack of this Liquor, is as followeth, viz. *Chymia quando sollicita est corpori, quod tanta puritatis Siphonia colluderet nobiscum, ut à corruptente nequiret dissipari, tandem stupefacta est religio, reperto latice, qui ad minimas reductus atomos, natura possibile, coelebs omnis fermenti connubia spernit. Desperata est ejus transmutatio, dignius se corpus non reperiens, cui nuberet. Sed labor Sophia anomalum in naturâ fecit, quod absque fermento commiscibili, à se diverso surrexit: Serpens seipsum iste momordit, à veneno revixit, ac mori deinceps nescit.* Of which he saith, *Unus & idem Liquor Alkahest omnia totius universi corpora tangibilia perfectè reducit in vitam eorundem primam, absque ulla sui mutatione aut virium diminutione, Mandat etiam naturam virtute sui ignis: Nam ut ignis omnes perimit insectas, ita Alkahest consumit Morbos, &c.*

Now as by the highest Preparation in the Chymical Art, Concretes become reducible into water; so likewise we see in a natural circulation, out of one shape into another, that water is found most what to be the last: For all Vegetables are distillable into a great proportion of water, also all juyces of Vegetables, are by Fermentation brought into potable Liquors, and those again into Vinegar, and that into a vapid Liquor, which at length is nothing but simple water. The Vine we see, which is the noblest of Vegetables, according to the nature of its Seed,

Seed, specificates the water or *Succus (leffas) Terra* into its own shape, attracting like a *Syphon* the Elementary Water in great plenty; out of the Earth, into its leaves and clusters. This innate Seed which makes the difference of water, coagulated in this Vegetable, from that coagulated in other Vegetables, by the concurrence of the influence of the Sun, and Season of the Year, begets a Salt and a Sulphur; these mutually acting upon each other in the Mercurial part, beget a Fermentation; in which Fermentation, there happens a separation and rejection of a feculent part, to the sides of the vessels, which is called *Tartar*; from which *Tartar*, by force of fire, is separable a Sulphur, Salt, Mercury, Spirit and feculent Earth; all which are not really pre-existent in the *Tartar*, but are new products by the fire, whereof the Salt and Empyreumatick Sulphur digested together, do by Distillation give a water; and the Spirit at length degenerate into water.

Now by Fermentation, and while the feculent *Tartar* is separating the Sulphur, by working upon the Salt; become united, and so graduated as they both combine in the Fabrick of a vinous combustible Spirit, which is promoted by a secret Fermentation, after the actual working is over; which is nothing else but a more firm and closely riveted union of the Sulphur and Salt, maturing the Mercurial part into a generous Wine.

This Wine, either distill'd, is the most part of it left, as an insipid Phlegm or water; yea and the very flammable vinous Spirit, is by the touch of Salt of *Tartar* in Fifteen or Sixteen parts thereof (according to *Helmont*) reducible into simple water: or if the Salt thereof become too much exalted, by letting go its Sulphur, then it degenerates into Vine-

gar ; which Vinegar (if dulcified by making *Saccharum Saturni*, or the *Sal Sennerti*) is totally reducible into an insipid water. The like happens in all Vegetables, for Water is the material Principle of Vegetables ; and therefore they ultimately resolvable thereinto.

That Water is the material Principle of Vegetables, is apparent, both because without water, whether distilled down upon the earth, in the circulation thereof in Dews or Rain ; or by the overflowing of Rivers upon the grounds, whence the fertility of *Agypt* from *Nilus* his overflowing the banks ; or by any other sort of watering grounds, because (I say) without water, from some of the foresaid ways, neither do Plants take nor increase, nor is any Vegetation perform'd: also because in water many Vegetables grow, shoot forth roots, and spread very largely, witness Mint, and several other Plants, whose tops being only nipt off, and put into a glass-viol, full of water, they begin in a few days, as I have seen, to shoot forth spriggy roots ; and from thence to grow up to a great height, even as if they were actually planted or set in earth ; whose growth and increase is from nothing else but simple water. So also many Vegetables (as I said) grow in water, and have no roots at all fastened in the earth.

To confirm which further, that remarkable Experiment of *Helmont* is very considerable, viz. He planted the Trunk of a Willow Tree, of five pound weight, in Two hundred pound of earth dried in an Oven ; having put them in earthen vessel, he moistened it with Rain-water ; after five years the Tree weighed One Hundred Sixty nine pound, three Ounces : and the earth being dried was of the same weight as at first. Now, Whence should proceed the great

great addition of weight to the Tree, of no less than One Hundred Sixty four pounds, unless from water, than which it had no other additional? The wood of which Tree I suppose no man will deny to be different from any other wood of the same *species*; and therefore upon Distillation must yield a sower Spirit, an Oyl, Phlegm, and Salt; if burnt and separated into soot and ashes, that soot again would yield a volatile Salt, Oyl, Spirit, Phlegm and Earth: all which are but the products of water, as by the Experiment is demonstrable.

To the like purpose the most ingenuous *Roberts Boyl Esq*; hath an Experiment which was thus. In a weighed quantity of digged earth, baked in an Oven, and put into an earthen pot, he set the seed of a Squash; this he ordered to be watered only, with Rain or Spring-water, I did not (saith he) without much delight behold how fast it grew, though unseasonably sown, which was about the middle of *May*; the hastening Winter hindered it from coming to its wonted magnitude: About the middle of *October* it was taken up, whose weight, with the stalk and leaves, was two Pound twelve ounces; the earth he baked as formerly, and found it the same weight. The like Experiment he had of Cucumbers, he had two fair ones, the weight of which were ten pounds and an half; the branches with the roots weighed three pounds, fourteen ounces: then baking the earth twice, and its weight was decreased one pound and an half; which twice baking might somewhat minorate the weight of the earth.

Now, Whence should proceed that great bulk, both in the Squash and Cucumbers, unless from water; which was the only matter additional thereto? And what happens to these planted in earth, and fed with

water, whose increase is found to be simply from water, The same (I say) doth, more than probably, happen to all other Vegetables, springing up from their innate Seeds, or transplanted into other Soyls; and that the Earth is only a receptacle or *Matrix*, where the variety of Seeds conceive in the common Mercury, Water (or *Leffas Terra*) and bring forth a Salt and Sulphur, from whose acting one upon another in the source of corruption, ariseth the Vegetation; and in that the formation of the Plant, according to the *Idea* wrapt up in the bosom of the Seed: for these two active secondary Principles, being hewed out from the seminal *Archeus*, work themselves extensively downward, but chiefly upwards, cloath themselves with a body from the primary Element of Water, and shoot forth into stalks, leaves, flowers, fruits, seeds, &c. shapes the body according to the platform of the seminal *Idea*, extraverteth the properties thereof, whence the variety of colours, odours, saviours and other specifical qualities, flowing from the essence thereof, better known to the humane *Archeus*, by assisting it against many Diseases, than apparent to the reason of man.

As we have demonstrated Vegetables to have their original material Principles from water, so also Animals have water for their constitutive Element.

For all Animals (I mean *superterrestrial*) have their nourishment, either immediately or mediately from Vegetables and Water; immediately as all manner of Cattle, proper for the food of Man; mediately as Man, who feeds upon the flesh of Beasts, and sometimes immediately upon Herbs themselves: so that in Beasts that feed of Grass and Corn, Water becomes once more remov'd from its primitive simplicity, undergoes a further transmutation by an

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Animal Ferment, that whereas before it had received a simple transmutation, or coagulation into plants and fruits of the earth, it now (by Beasts feeding thereon) suffers a second alteration; and by the Ferment of an Animal, is turn'd into a *Chyle*, *Chyme*, Milk, Blood, Urine, Flesh, Bones, &c. and all these different one from another, according to the difference of the *Species*.

Now these Creatures, or parts thereof, are further transmutable by the Ferment of other Animals that feed upon them; as for instance, the flesh of Beasts, or milk therefrom (which is water twice remov'd by the *Medium* of Ferments) is by the Ferment of an humane stomach, altered again into a *Chyle*, *Chyme*, Milk, Blood, Flesh, Bones, Urines, &c. wherein the specificall Salt and Sulphur, do act variously upon each other; which in sound persons by the assistance of the Ferment of the heart, work each other into a ruby balsamick Animal *Elixir*: and that coagulated in the capillary vessels, becomes Flesh.

And we see, if Blood be distill'd, the greatest portion thereof is Phlegm or Water, so that, above two thirds thereof is an Elementary water; in like manner, Urine is most part of it separable into a waterish Phlegm; and Milk distill'd ariseth the most of it, in an insipid water. In the distillation of the flesh of an Animal, a great part thereof ariseth into water; amongst which the flesh of Eeles, if distill'd (as that great Naturalist Squire *Boyle* witnesseth) yield a very great proportion of water; in which (while distilling) they seem to boyl as in a pot of water, or like *Dantz* Vitriol in an earthen pot, placed in the fire, seemed to be nothing else but water, so these to be nothing else but Phlegm congeal'd.

To which purpose *Helmont* tells us, *Anguim Car-*

nes, pisces, Mucilago semel glaciata, eo ipso mucaginem amittunt, & in aquam redeunt; itam omnis Terra Mucilago, quæ aliàs facile in vermes vertitur; for that Izinglafs, Flesh, Fish, &c. should by being frozen, lose their form, and thereby be reducible into water, is no less than an evident Argument of what I am proving, *viz.* That water is the primary subjective Principle of all Vegetable and Mineral Concretes. And that Seed together with the potential Ferments thereof, are the Authors of all transmutations; by the operation of which, Water becomes differently coagulated and specified, according to the variety of the Seed, and the innate Ferments thereof, into this or the other formal Concrete or part thereof: which Ferments being connatural with the Seed, is more powerful than fire, and therefore fitter Agents for transmutation than fire; and that because, fire can only burn Stones into a *Calx* (as the most profound Philosopher *Helmont* saith,) and wood or Vegetables are thereby turned into ashes, than which (unless by addition of Sand, it may further make glafs) the solitary fire can operate no further; and yet these very *Calx*-stones and ashes, may, by a Ferment in the earth, be transmuted into the *Succus* (or *Leffas*) *Terra*; and thereby fertilize barren grounds, and so assume the shape of Grasse and Corn, which a while before was in the form of Stones, Dung, Ashes, &c. and that which was lately Grasse and Corn, presently by the Ferment of an Animal, becomes Blood, Milk, and Flesh, of a Beast; these again by a putrid solution of the *Compage*, are transmuted into Worms, Flies, and other Insects, which often retain some shape of the Animal whence they proceed; and that which even now was in the shape of a Beast, as Beef, Mutton, &c. is forthwith by the Ferment of an humane

humane stomach, transmuted into Man's Blood, Flesh, &c. and these again degenerate into Worms or other Insects in Fevers, and being let out of their vessels, they undergo any other *Analytical* putrefaction, they become animated in strange different shapes; all which is but Water, *Procreans*-like, under various disguises, transmuted by Seed and Ferments out of one shape into another, according to the great round of Circulations: And all as they have their beginning and subsistence, so are also reducible into Water. Yea further, as Vegetables and Animals have their original from and are reducible in water, so also Minerals and Metals. And though this is not so demonstrable as the former, because we have not that occasion usually to converse with the Subterranean Products, as with Vegetables and Animals; yet I find to this purpose, what the Learned Squire Boyle cites out of a *French* Author, Monsieur De Rochas, who, as a Chymist, speaking what he could perform by water, "Having (saith he) discerned such great wonders, by the natural operation of water, I would know what may be done with it by Art, imitating Nature; wherefore I took water, which I well knew, not to be compounded nor mixed with any other thing, than the Spirit of Life, and with an heat artificial, continual and proportionate, I prepared and disposed it by graduations, of coagulation, congelation, and fixation, until it was turn'd into earth, which earth produced Animals, Vegetables and Minerals; the Animals did move of themselves, eat, &c. and by the true Anatomy I made of them, I found they were compos'd of much Sulphur, little Mercury, and less Salt: The Minerals began to grow and encrease, by converting into their own Nature one part of the

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"earth;

“earth; they were solid and heavy, and by this truly demonstrative Science, namely Chymistry, I found they were composed of much Salt, little Sulphur, and less Mercury.

By which Experiment, according to the relation of the Author, Minerals were generated out of water, which I suppose was done by some Mineral Seeds, or the *Analysis* of some Mineral Concretes; into their secondary Principles, which by due digestions assum'd Water for their bodies. For Mineral Seeds in their due *Matrixes*, concenter water more or less according to the nature of the Seed, and fitness of the place; and accordingly give more or less *pondus*, as the purity of the Seed and disposition of the place is; whence are lighter and heavier Minerals and Metals.

Also Metals are reducible into water, witness what the foresaid Author saith, That by a certain artificial way of handling Mercury, without any addition, may be separated therefrom, a fourth, or fifth part of water, or clear liquor, which for ought I have heard, or seen (saith he) is not reducible into Mercury again, and so is more then a disguise.

That Mercury, or rather Quicksilver, should in its weight to the like bulk of Water, be as fourteen to one, is from the Seed of the Quicksilver, concentrating the body of water, according to that proportion; towards whose reduction, two credible Persons told the foresaid Ingenuous Author, That after (as he saith) many trials which they made, to reduce Mercury into Water, in order to Philosophical work, they did once by divers Cohobations, reduce a pound of Mercury into almost a pound of water; and this without the addition of any other thing, but onely by pressing the Quicksilver by a skilful

skilful managed Fire, in purposely-contriv'd vessels. To the like purpose *Isaac Holland* and some others, speak of separating a water from Quicksilver, which they call *Aqua Nabis, quâ tanquam Hydrops, Mercurius turget.*

Not to mention the experiment of increasing the bulk of a stone, by the single addition of fountain-water, till it swell to the bigness, and figure of the glass it's put into; for we see, that water needs no more then a petrefying Seed, to compress it self, or other things it meets with, whether Vegetables or the like, into a stony concretion; as for instance, the petrefying well at *Knarsborough*, which hath, in continuance of time, wrought the earth, and grass thereabouts, into a rocky *Compages*, with petrefied Isicles hanging down, where the very Streams of water, as they run along, are actually congealed into stones, which (I say) can be from nothing els, save a petrefying Seed, connatural to that sort of water.

This *Succus lapidificus*, may have its Seminals (I say) from a petrefying Nitre, according to the experiment of the learned *Kircher*, *Si saxum inquit, quodcumq; in tenuissimum pollinem resolveris; et aquâ perfectè commixtum, permanicam Hippocratis colaveris, illa nil prorsus saxum, sed præter arenaceum solummodo sedimentum nil relinquet; si verò Nitrum, vel Tartarum aquæ perfectè commixtum addideris, illa, quæcumq; tetigerunt intra subjectam concham posita, sive frondes similiaq; post exiguum temporis curriculum aeri exposita, vel in Saxum ejusdem generis conversum, si non totum, saltem cortice Saxeo vestient;* So that the petrefying Seed, whether in Water, or in Nitre, or in the Stone it self, is, in effect, all one.

So that understanding the nature of a petrefying Seed, and the extent of subterraneall Channels, from the

the Sea at great distances upon the Land, we need not wonder, that some fish is digged up in some places petrified; several of which was to be seen amongst *John Tradescant's* Rarities. That there are Subterranean Channels, not onely from one sea to another, but from the seas, at very great distances upon the land, the Ingenuous *Kircher* doth fully demonstrate. The first by a *Dolphin*, which was taken in the Red Sea; which by the command of the *Bassa* of the place, was put into the water again *cum laminis in bronchia insertis* with these words in Arabick Characters ingraven *Amed Abdalla Bassa Sues tibi vitam, unâ cum hoc munere donavit, anno Hegira, 720*: which *Dolphin* was, the very same year, taken in the *Mediterranean Sea*, prope *Damiatam*, which could not possibly be, that the *Dolphin* should swim that vast compass, round *Africa*, and take in at the *Streits*, and so up to the furthest part of the *Mediterranean Sea*: whereas from the *Mare rubrum* to *Damiata*, is but a small neck of land, little above 30 Miles; and therefore must pass along those subterranean channels, whereby one Sea communicates with another.

As there are Subterranean passages, from one sea to another; so (as I said) from the seas, to great distances upon the land; whence all Fountains, Springs, and Rivers, have their Original, and return again into the sea, contrary to the opinion of *Dr. Wittie*.

In which Subterranean currents, the things carried along with the water, whether fish or the like, may (when they come in places, pregnant with a petrefying seed) become congealed into a stone, from which lapidifying Juyce, all Stones, whether Rocks, Quarries, Marcasites, or what Stones soever, within, or upon the surface of the earth, had their concretion originally.

Hence

Hence is the reason, why some Animals are found inclosed in some Stones, or other Mineral concretions; as for instance, that a Toad should be found alive in the midst of a Stone: or that a Spider, or other Insect should be found in a peice of *Amber*. It is (I say) because these Animals are there, whilst these Stony, or other Mineral Concretions are in *Succo*, for *Amber* is of late, found to be a Mineral, and no product of the Sea, as it was usually suppos'd. There is lately a Mine thereof found in *Germany*, which brings in a great profit, to the *Duke of Brandenburg*. It consists chiefly, of a sulphur, and a Salt, as we find by the distillation, and rectification thereof.

Now all Minerals are, or have been, at some time or other, *in suis Principiis*, in their first Succulencies; in which at the time of Concretion, if any other thing happen to be there, it's wrap't up together with it; which keeping the inclosed bodies from the air, and consequently from any *Analytical* putridness, are as a constant defensive Balsam, preserving them perpetually from corruption.

All Mineral Seed is invisible, and to make themselves visible, according to the appointment of God in nature, having got futable *Matrixes*, begin, by a Subterranean heat, peculiar to the place, to work upon the Element of water, which it impregnates, and transmutes into a Mineral Juice; in which Juyce, the Seed begins to work it self into a Mineral Mercury, and Sulphur, and in some places, into a Mineral Salt.

Now according to the purity or impurity, Volatility or fixity of the Sulphur, so becomes the Mineral, more or less pure, retaining a Specificall difference, from the first *Ens* of the Seed: Amongst which, some have their Mercurial parts stained with

a malignant Arsenical Sulphur, viz. *Realgar*, *auripigmentum*, *Antimony* &c. but if the Sulphur be so strong, as in its union with the Mercury, it rejects the most Heterogeneities, which usually in Mineral productions, adhere thereto, then doth this combination of the Sulphur, and Mercury, arise to a Metalline *Compages*.

For, The first specification of the Mineral *Sperma-tick Mercury*, is into *Quicksilver*, or Metalline Mercury; the next coagulation of Mercury, after the rejection of some Heterogeneous *Sordes* by Sulphur, is *Saturnine*, where the Mineral Seed, first puts on a Metalline form, which is called *Saturn*, or Lead; whose Mineral is *Antimony*; when or where this Sulphur becomes more depurated, it coagulates the Metalline Mercury, into *Jupiter*, or Tin: But if the sulphur attain a *Solar* tincture, and yet retain many permiscible Heterogeneities, it coagulates the Metalline Mercury, into *Mars*, or Iron; If this Sulphur, in its *Solar* tincture, receive a depuration of some of the aforesaid Heterogeneities, it coagulates into *Venus*, or Copper, which comes nigh in tincture, but is farr short in *Pondus*, of *Sol* or Gold; for as *Basilius Valentinus* saith, that in *Mars* and *Venus*, lodge *Solar* tinctures, which, graduated by Nature, or Art, are deducible into *Sol*: and that, because the soul or seed of *Sol*, is found therein, and not onely in them, but in their Minerals where they are nearer to their *Primum ens*; in which also (by the way) doth lodge the *Sulphur Philosophorum*.

But if this *Sulphur* be so far graduated, as that there is a through-separation of all Heterogeneities; and that the *Sulphur* hath almost inseparably united it Self with the *Mercury*, then they are coagulated into

into *Luna* or Silver: which though it come short both in Tincture, and *Pondus* of *Sol*, yet because there is a total separation of Heterogeneities, it lies in the direct road, by further maturation to both, and thereby to become *Sol* it self, which is *Apex Metallorum*, the perfectest of Metals: whose Sulphur and Mercury are inseparably united, and by maturation graduated in tincture and *pondus*, to this unary perfection of the best of Metals.

Thus we see how Water the primary Element, by the spermatick efflorescence of a Mineral Seed, becomes wrought into a Mineral Juyce; and that, by a peculiar fermentation, is turned into a Mercury, and Sulphur: and those again by maturing or ripening, each other, according to the degrees of the purity of the Sulphur, rejection of Heterogeneities, and union together, become transmuted, or rather, exalted into metalline Bodies, where at length, water by the concentration of the metalline Seed, puts on the *Pondus* and tincture of Metals.

As the Seeds of Minerals are invisible, so likewise are the Seeds of Vegetables and Animals; as for Vegetables, indeed the grain, or husk (which is improperly called Seed) we see; but the prolific part thereof, which is truly the Seed, cannot be discerned, by the most accurate artificially contriv'd *Microscopes*; being as the *Cosmopolite* saith (his manner of computation I know not,) but the 820th. part of the visible grain: however they are so minute, as not to fall under the sense of our Opticks, though helped with the best contriv'd glasses; and although some plants are propagable otherwise then by Seed (I mean, then by the husk (where usually the Seed works) as Rosemary, Mint, Sage &c. whose tops, or slips set in the ground, take from whence

whence they grow, and increase) yet in such as also in the Scions, Imps, and Grafts of fruit Trees, the seed or prolific part is dispersed, almost through the whole body of the Plants, and Trees; whose manner of assuming a body from the *lessas terra*; and of that from the Element of Water, I have already described.

And as I have shewed the progress of Vegetable, and Mineral Seed from Water, into all the visible clothings of their bodies; so now I would observe to my self, how the Animal Seed, works upon that, which originally is Water: and from that, doth shape it self, according to the appointment of God, into a body consisting of Blood, Flesh, Bones, Sinews, Nerves, Arteries, Head, Stomach, Heart, Spleen, &c.

First then, the *Sperme* it self is nothing else originally, but Water altered by the several Ferments of the body, and circulated in the Seminal vessels, till it becomes impregnate, with an efflorescence of the whole body, which indeed is the Seed, or prolific part thereof; for the *Sperm* is onely the receptacle, or vehicle of that Seed. Now when the efflorescence becomes maturated (For a Child Chicken &c. whilst such, are not capable of propagating their like) and that the *Spermatick liquor* is thoroughly digested, in the vessels adapted for that purpose; then begins that *Titillatio* (that sixth sense according to *Scaliger*) or *Prurigo Venerea*, by which, being conveyed into a proper capacitated *Matrix*; the efflorescence of the Masculine Seed, doth impregnate, or breath upon (for I know not how better to express it, then by a kind of occult breathing) the Female passive Seed, which is a Juyce, preparable from all the Ferments of the Female body, and also circulated in their

their proper *Spermatick* vessels, which conveyed into the *Matrix*, receives that prolific *Halitus* or breath of the Male's efflorescence; and that oftentimes, with the reception of a very small part of the *Sperme*, the body of which, is most what rejected, and the very prolific odour or breath thereof retained, which doth become *Succum femininum*, *qui complet (secundum Dei Opt. Max. beneplacitum illud, Crescite, & Multiplicamini;* For the *Matrix* never opens its foldings (*nipote pars membranosa, complicata, semini virili nutriendo à deo ordinata,*) but at the time of Conception; *Nulla unquam fit (inquit Helmontius) plicati uteri Expansio, in congressibus ut voluptuosis, nisi in ipso conceptus instanti; hinc brutorum ferè infallibilis conceptus.* Therefore the opening of the Womb, is the gift of God, inasmuch as it hath a *Regimen* of its own, which, as to conception, consists in a peculiar Magnetick Blaft; not to be opened, or set at work, at the will or pleasure, either of Male or Female; whence proceeds the very cause of sterility, or barrenness; that though the parents have never so eager a desire, to have Children, yet because the *Expansio Uteri* or opening of the Womb, is not at their beck, nor subject to their will, we see many are denyed the blessing thereof; others, though they have no desire to Children, yet often have many: so that the *Magnetism* of the womb, is not at the beck of the humane will. Another cause of sterility, or barrenness is, *Quum uterus semen male imbutum, semel recipiens, illud rejecit, nec deinceps se aperit, ut intro sugat invitum istius viri semen;* for many times, a woman conceives by the second husband, though she had been (as it were) barren to the first.

Now

Now, as soon as the *Matrix* opens it self, by its proper *Magnetism*, and receives the prolific breath, of the Male efflorescence, contained in the *Sperme*, the Feminine Seed, or circulated *Succus* becoming impregnate therewith, then forthwith is the *Matrix* closed up; & *deinceps nullus patet aditus semini virili in intimos uteri thalamos, quamquam iteratis conatibus congressus irritatur*: The Seeds then begin to act upon each other, I mean the efflorescence of the Male, to act upon the Feminine *Sperme*, and to make intimate commixture, each with other.

Now in different *Animals*, the Formation of the *Embryo*, is somewhat different; for in all *Oviparous* creatures, the first alterative motion in generation, is the *Punctum saliens* (according to the experienced Naturalist, Dr. *Harvey*, which sendeth forth little streams of blood, which are coagulated into the vessels, and parts of the body of the *Animal* out of the *Albumen*, which is nothing els, but water congeal'd, by the Seed of the Cock, and the Hen: But in the humane Feminine *Matrix* the conceived seed *Per occultam Syngamiam*, becomes an opaque liquor, being in *puncto putrefactionis*; of which mortification of the seed, the anguish of sickness, faint fits, vomiting, provocation and nauseating of the Stomach, gripings in the body, pains in the back &c. are sufficient *Symptoms*: without two or three daies, after the *Turbines* of this Seminal Juyce, it assumes (as *Helmont* observes) the similitude of a transparent *Albumen*.

The sixth day appears the *Archæus utpote seminum Incola, tanquam vapor nubilus*, which after the thirteenth day, shapes the Seminal liquor, into the form of an humane *Embryo*, which is then very minute, and

and, as yet, without *Sexual discrimination*, being only an *Umbratious figuration* of the *Microcosme*.

Then doth this *Aura figurata*, hide it self for a while in its own *Chaos*, and soon after cloths it self with a visible *Secundine*, and then becomes impress'd with the *Signature* of the *Sex*, in which all the essential Organs of the body, with their Topical *Ferments* depending wholly upon the Specificall Seminal Principles, become formed, and made manifest; which receive their increase from the maternal blood, separated from the whole mass thereof by vessels fitted for that purpose.

This *Embryon Anchorite*, in its first rudiments, is very small, and yet hath the exact proportion of all the parts belonging to the humane body; as I have seen it, in an abortion, scarce half so big as my little finger, at about ten weeks after Conception, which yet hath had an uniform *Symetry* of parts, with a visible difference of the *Sex*; whose constituent Principles hath been so tender and near to its primary *Spermatick liquor*, as that it hath, *suâ sponte*, liquated, or melted into its primitive Juyce, or *Liquor*, it swam in; and that because the tender *Embryo* is very near, to its *Succus solutus* or *Primum Ens* (if I may so call it) and therefore, easily reducible thereinto.

The *Plastick spirit* which is in the Seed, and forms the *Embryo*, is that which we call the *Archeus*, or *Faber Plasticus*, which by degrees (all other necessary causes cooperating) awaken the Powers, depending essentially upon the seminal Principles, forms the parts, brings forth the *Ferments*, strikes the Vital fire in the heart, whence springs up the *Anima sensitiva*, illuminates the blood, and Animal functions, with the *Aura vitalis*; and so out of one thing, gradually

dually brings forth another, whilst on the wheel of formation, until all the Parts, Organs, Ferments, Animal and Vital Functions, be brought forth, belonging to the formation and animation of the humane *Embryo*.

And as this *Archeal Faber* is concern'd in the formation of the parts &c. before the appearance of the *Anima sensitiva*, so also the *Regimen* of the ferments, and management of the Vital concerns, is committed thereunto, after the Vitality of the *Embryo* is performed, both as to the nourishment, and encrease thereof from the Arterial Blood, brought into the *Matrix*.

Now, the reason why women (during the time of Conception, and Maturation of the *Fœtus*) are frequently sick by fits, and have many troublesome *Symptoms* upon them, even many times, till after the birth, is, because after the nourishment of the *Fœtus* which onely takes the purest parts, and most delicate Juyce of the Mothers blood, for its refection; the remaining *Sordes* are many, especially the Womb being the *Cloaca Humorum*, which now not being carried away by the usual Emunctories of the Womb, do regurgitate into other parts, vitiates their Ferments, alters the tone of the membranous parts, disturbs the *Oeconomy* of the blood, whence arise Gripings, Vomitings, Nauseatings, Pains in the Head, Pains and Weakness in the Back, *Febricula's* yea sometimes Feavers in an high degree &c. which also happen, many times, to women who have not conceived, having *aliquid amplius*, and are denied the benefit of natural evacuation, by that Emunctory; and therefore are subject to the like passions, and disorders of health, as those with Child are; who are many times apt to vomitings, though indeed, there

there is another cause of the frequent illness of women with Child, which now I have not time to mention, but it hath relation to what was mentioned in the foregoing Page.

And therefore to use gentle purgations, even in the first months after Conception, is not so dangerous as Physicians usually suppose; and not onely harmless, but also of great use for preventing bad fits, and making them more healthful, during the time of being with child: Nay I have known pretty strong purges given, soon after conception; which hath wrought pretty smartly, and yet no prejudice at all to the *Fœtus*; so that Physicians need not be so curious, nor women at that time so cautious as by denying them the benefit of gentle purges, to prevent them of that healthfulness, which otherwise they might much more happily enjoy, then otherwise they do.

That there is a Sympathetical combination betwixt the *Matrix*, and the Stomach, is evident; both because, if a good *Uterine* medicine be given, in cases of *Uterine* discomposures, that many times, whilst the Medicine is yet in the stomach, hath an influence upon the *Matrix* composing the disturbances thereof, and allaying the *Furibund* intragements of that unquiet Animal; as also in cases of difficulty of birth, I know a certain *Specifick*, of whose efficacy I have had frequent experience, even to admiration: Which while it is yet in the Stomach (especially if the birth be brought to Maturity) it opens the mouth of the womb, enlargeth the passages, unhingeth the *Os sacrum* and making the throws effectual, expelleth the *Fœtus* whether dead, or alive, which I have experienced upon several Women, that have laboured, one, two, or sometimes three

daies in vain, and within half, or a whole hour, have been very safely delivered; with the same and some other additions, I have known a *Mola* expell'd out of the womb, almost as big as my head; and to expel the after-birth (those *Quisquilia Matricis*) nothing is more effectual; and all this, from the influential vertue of a Medicine (whilst in the stomach) upon the Womb. But to return:

All the Nutriment which the *Fœtus* hath, is either from the blood, which in young women, or such as do not conceive, gives matter for the Natural evacuations; or from the *Succus Spermaticus* digested, by a peculiar Ferment of the parts it is circulated in: both which, saving that they receive a particular and determinate difference by Ferments, are materially nothing els, but water; out of which by the power of the *Plastick Spirit*, is the *Fœtus* form'd, both as to the parts containing and contained, viz. both as to the solid parts and vessels, as Juyces &c. but the specifical Ferments, are peculiarly inherent, in the *Syngamical Spermatick Liquor*, which being gradually transmuted into blood, by a further maturation of the *Spermatick Principles*, becomes settled in several parts of the body, after the following manner.

The *Plastick Faber* lurking in the *Spermatick* Juyce, begins to hew forth the form of an humane *Embryo*, out of that Albuminous liquor which is brought in, together with the blood, from the *Mater* thereof, as Materials for this Animal Fabrick; out of these two, by the *Energy* of its own power, it shapes the body, gives a current to the newly ingendered Juyces, in their own pellicles or membranes, and begins to make these Juyces circulate, which as they circulate, are coagulated upon the Solid parts,

parts, whence the *Accretion* thereof; and upon some particular parts they impress a tincture, which retains a seminal Character, being some separable parts of the circulating juyces which by further maturation become radicated and essential Ferments, but are not yet vital, till they are inspired with the *Aura vitalis*; thus one riseth up after another in the wheel of *Evolution*; and thus all the powers and seminal Characters of the prolifick *Sperme*, become awakened one after another, until the *Fœtus* become complete. Now, I say, the Ferments are nothing but leavened parts, separable from the primary Spermatick Juyces, with a seminal impression, which makes them Essential Agents, especially after their illumination by the *Aura vitalis*; till then, they act not; and after that ceaseth, their operation also is at an end; for all the Art we have, cannot make them perform the wonted Transmutations, after, as before death; and therefore as to their seminal impressions, they are (as *Helmont* saith) indemonstrable *a priori*, because they owe their specifical *Energy* of Transmutation immediately to the Seed and *Plastick* power thereof.

Now the Elementary Juyces, and blood brought into the *Matrix*, are nothing else but a *Carva* of water, and so also the blood and succulent parts of the *Embryo* are the same, yet further remov'd by additional Ferments; for the *Plastick* Spirit awakeneth the Ferments and *Anima sensitiva* out of its own bosom; and by the mediation of the Ferments, makes all those Transmutations, requisite for the nourishment and growth of the *Fœtus*. The subject matter that the Ferments work upon is water; from this by the alteration thereof (as I said) by Ferments, our bodies are shaped, nourished, and increased in the womb; and after that, when we are brought forth,

we feed upon Milk generally, and that either of Womans Milk, which is nothing but water or the succulent parts of Meat and Drink, altered first by the Ferment of the Concrete we feed upon, and next by the Ferment of the stomach and Intestines, and lastly by the Ferments of the Breasts themselves, which perfects the *Lacteous Cremor*, or Milky Juyce, passing from the Intestines, by the *Vena lactea*, *glandules*, and *Thoraical* vessels, through the *Mammillary* Conduits into the breasts themselves; or of Cows milk, which is nothing else but water, first altered by Seed out of the *Lessas terra* into Vegetables, and then again altered by the Ferment of the Cows stomach, and lastly is completed by the Ferment of the duggs.

When we grow up to feed upon stronger meat, as flesh and the like, this is nothing but the foresaid *Cremor* or milky Juyce, transmuted, by other Ferments, into flesh: For we see that when Cows are dried of their Milk, and have good Pastures, that they then fatten a pace; because that which otherwise passeth into milk, and by the plenty thereof keeps them poor, is now, by other Ferments coagulated into flesh, so that flesh is but water, yet further remov'd by Ferments. And as for bread, which is the staff of Life, that, I mean Corn, may be reckoned amongst Vegetables, which (with them) hath its Original from the *Lessus*, and that from water, and is only altered in its shape, from the seed thereof, which gives difference to all things.

And for our Drink (as I shewed before) it's nothing but water, which, whether it appear under the form of Wine, Sider, Perry, Ale, Beer, &c. is nothing but the disguises of water, altered only by Seed and Ferments. Thus like Plants we grow from water, as if indeed we had taken rooting therefrom, and

and like *Amphibious* we live, and walk upon the face of the Earth, whilst we feed upon water.

Also we grow and increase in bulk, from water, until we come to our full stature, and then the Ferments are most vigorous and active; for in the beginnings of Animals, the Ferments are very languid, especially (I say) in the *Matrix*, and therefore the Transmutations they make, are but very slender and *tenuous*; whence is the facile reduction of the minute *Embryo* into its first *Spermatick* Juice or Elementary Liquor. In Children the Ferments grow stronger, but yet is very weak; whence is their aptness to breed worms, which proceed from a debility of the embalming Ferments: as Children grow up in years, the Ferments grow more strong, and therefore they require stronger meat, and the Transmutations of the Ferments are more vigorous; whence the bones and flesh of young Men, become more solid and firm; and that increaseth till the body come to its full stature: so that it is the vigour of the Ferments that gives flower and strength to the body, and their defects give being to Diseases, make the Spirits flag, the sinews shrink, and the flesh waste away, by a lingering *Tubes*; and that too, oftentimes in the very spring of Youth; even, many times, whilst we are upon the *Meridian* of our days, occasionally from the assaults of many Diseases.

When we are once arrived to the *Zenith* of our Years, that the florid strength of our bodies, are demonstrable *Indexes* of the agile vigour of our Ferments and vital Functions, we stay not long here, but then begin to decline and to go down the hill; our strength begins gradually to be impaired, and that, because our Ferments and Vital Powers (when once mounted to their *acme*) are *labil* and in continual

Flux,

Flux (for so all mortal powers are, they begin, grow, come to their full state, decline and come to a Period, either by a further transmutation, or reduction into the first *Hyle* or primitive *Chaos*) therefore they spontaneously decay, and with them the Fabrick of the solid parts of the body ; so that old Men that live out the full number of days, do but spin forth a longer consumptive thread, than others ; they wear away with an insensible *Tubes*, having their succulent parts dried up by the exiccating *Blas*s of the Air, and that through the deficiencies of the vital Ferments.

And thus Old Age performs that, at the long run, which a lingering Disease, whose Seminals are deeply seated in any principal part, as stomach, lungs, liver, veins, &c. vitiating the Ferment thereof, doth in a less time, as perhaps in a year, half a year, three months or less, *viz.* wear away the body by a continual wasting or Consumption until the parts are reduced to a *Skeleton*, which being after entombed in the earth, doth (as all other bodies) by the *fracedinous* odour thereof, *Faiscere in succum suum primitivum, legesque aqua subire*, turns into a sort of *Leffas*, and that, by a further reduction is nothing else but water, not to say, what a great quantity of *effluvia* or vapours (which for the most part are materially water) pass continually through the pores of our bodies ; perhaps, if duly computed, not much less than the one half of the weight of the food we take in, and yet is nothing but water circulated in our bodies, through various Fermentations, and at length reduced to its primitive simplicity.

Thus we begin, we grow, we come to our full stature, from the operation of Seed and Ferments upon water, whose degrees of vigour upon the material
stage

stage thereof, gives the various *Stadiums* of Life: Then we bend to Diseases, we decline, we die, when the vital Powers and formal Ferments march off the stage, and have their *exit* into their primitive *Hyle*, and the body then, ultimately reducible into water by the *Fracedo* of the Grave. Hence I conclude all bodies in the *Mundane System*, whether Vegetable, Animal or Mineral, from water as the material Element, and by Seed as the efficient Agent, have not only the Beginning, But

THE END.

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APPENDIX

Concerning the

ORIGINAL of *SPRINGS*!

1.



D *T* is not the least part of *Dri Wittie's Book*, to Discourse of the Original of Springs, and therein to assert their original to be from Rain and Snow-water; from the confluence of which two, he supposeth all Springs to flow: and that after this manner, *viz.* the Snow and Rain, falling from the Clouds in great abundance upon the Earth, do by moistening the *Superficies*, cause it to bring forth Vegetables, which we grant, *viz.* That the moisture exhal'd from the Sea and Earth, carried up into the Clouds, becomes impregnated with an influential Nitrous Salt, or *Sal Hermeticum* (floting to and again in the Atmosphere) And circulated or cohobated upon its *Caput mortuum*, the Earth gives fertility to the ground, and makes it apt to bring forth Vegetables.

2. The remaining part, saith he (except what suddenly runs into Rivers) sinks down by secret passages

sages into the earth, with which the *Superficies* doth abound; and in rocky ground it runs through the clefts, and by them is conveyed to the Subterranean Channells more or less deep, in the earth, where it is concocted by the earth, and moves as blood in the veins, &c. We shall indeed admit thus far of what he saith, viz. That Rain and Snow-water are the proximate cause of all Land-Springs and sudden Floods, filling the Porosities and Channells of the *Superficies* of the Earth, the remaining part restagnates, till it find decliv Currents out of Brooks and Ditches into other Rivulets, and those again, by further passages, swell into Rivers, and thereby cause inundations of low grounds, till those Rivers empty themselves, by other intermediate ones, into the Sea itself: But that the same should be the cause of the *Fontes perennes*, viz. of Living Springs, I altogether deny, as shall afterwards be evinc'd more clearly.

3. This Water (saith he) at length, in its passage through the veins of the Earth, finds vent, and runs forth; which place of eruption we call a Spring or Fountain: And this springing forth or eruption of the water, I conceive (saith he) to be made from its own natural inclination and tendency towards its proper place; assigned to it by the Creator, which is the convex part of the earth, it not resting till it meets with its natural correspondent, the Air; under which it must needs lie, because of its greater gravity, as above the Earth, by reason of its levity: And this I think (saith he) to be the natural reason of its ebullition out of the Earth,

4. Here the Doctor hath at once conceiv'd and brought forth the causes (as he supposeth) of all manner of Springs, and their manner of issuing out
of

of the Earth, *viz.* from rain and Snow-Water, and their tendency in the Channels of the Earth, to their proper place the convex part thereof, For he having numbred three general Opinions, concerning the Original of Springs, *viz.* first by percolation of the Sea. secondly by transmutation of Earth, or Air into Water, within the Bowels of the Earth. Or lastly by Rain or Snow, with the last of which he closeth. As for the second *viz.* the Opinion of the transmutation of Earth into Water for the supply of Springs, it's so absurd, that its enough to name it although the Dr. is too credulous, in telling us, he can easily believe, That the thinner part of the Earth, may be turned into Water, as also the grosser parts of Water, into Earth: So the thinner and more subtile parts of Water, into Air, and the grosser parts of Air, into Water, arguing a Transmutability of the Quaternary of Elements amongst themselves: which I wish, he could make me believe, too, by any ocular demonstration.

5. As for that Transmutation of Air into Water, for the supposed supply of Springs, it's *Aristotle's* opinion; and Dr. *Wittie* denying this *Thesis*, yet saith, that reason tells us, that more then ten parts of Air, will not serve for the making but of one part of Water, I think (saith he by *Parenthesis*) twenty would be to little. But if I should be heard to speak in this case, it should be Paradoxical; and that thus (*viz.*) that five parts of Air, would be too much, and five thousand parts thereof, would be too little, for the making one part of Water.

6. I shall therefore first, endeavour to impugn his *Thesis* of Snow, and Rain-Water, to be the Original of all Springs, by being Negative therein: Next to which, I shall, assume a positive *Thesis*, from the

the Circulation of Water in the Terraqueous Globe, by the mediation of Subterranean Channels, from Sea, to Sea : yea and from the Sea , to the Heads of Springs, from them into Rivulets, and those again into Rivers, and those into the Ocean, and so circulate round.

7. First therefore that Snow, and Rain-Water, should give Original to living Springs (as we call them) cannot be, because then upon deficiency of Snow and Rain-Water, as usually happens, in long droughts, these Springs would certainly fail : But we find the contrary, viz. that in long continued droughts, when all Land-Springs are thereby dried, that yet the true Quick Springs are as fluent as ever. *Ergo*, they are not fed by Snow or Rain-Water. I cannot indeed, deny but that Quick-springs, are not without their additional supplies, from Land-Springs which are fed by Snow or Rain-Water ; and thereupon may, in long droughts (having those auxiliaries drawn off) become less able to manage that strong current they had before : yet doth it not therefore follow, but that these Springs, when solitary, fetch their Original deeper then Rain Water can sink.

8. Yea, suppose we should grant, that some few of these Quick-Springs, should (for the generality of them do not) prove deficient through long continued droughts : yet this may very probably happen upon a double account. First, because the Quick-Spring it self may be lengthened, by the additional supply of a Land-spring, being (suppose) but an arme of that larger Channel, which is carried under ground, at a greater distance, to another Spring, of a more strong current ; and therefore a drought ; taking away its Auxiliaries, may thereby break off an arm, and make it run in its strong single Channel,

nel, along the *Sabulum bulliens*, to an other Spring-head, where it glides currently away.

9. The next reason, why some few Quick-Springs (as I said) may in long droughts prove dry'd up, is, because the *Superficies* of the earth, is so exhausted of that Natural moisture, which should supple it for Vegetation, and the like; as that it imbibes it into its self like a Spung, and the Spring spends its stock, to moisten the thirsty earth about it, and so proves deficient in its current, But when the earth becomes again satiated, by irrigating showers, then, that which before was diverted to moisten the Earth, finds its Channel again, and runs as fluently as ever.

10. The second reason, why Springs have not their Original from Snow and Rain-Water, is, because we find Springs break forth upon the tops of Hills, or Mountains, which flow, even in the greatest droughts: Now if Rain-Water should at that season, onely supply them, then of necessity, upon want of Rain, and continuance of long droughts, these must be dryed up; yea, and that very speedily too, because they want a supply, from their essential constituent Cause, which according to his *Thesis* is Snow or Rain-water: But, by experience, we find the contrary, (*viz*) that Quick-Springs, even in long droughts, do keep their current; therefore Snow and Rain-Water are not the constituent, or efficient Cause of Quick-Springs.

11. The third reason, that makes me scruple the Veracity of this *Hypothesis*, is, because neither the Dr. nor the rest of the Assertors thereof, have duly assign'd the manner, or Method, the Pipes, Channels, or Conduits, how Springs, having their Original from Snow, or Rain, should ascend and mount the
tops

tops of Hills, and spring forth in the uppermost parts of high Heaths: And why upon the truth of the assertion, they should not rather alwayes be thrust down into Vallies, and confin'd to low, decliv places, as being more proper for the heavy body of Water (according to their own supposition, of its being next in weight to Earth) to descend then contrary (as they say) to the nature thereof to ascend: To make Water climb a Hill, forcing it *volens nolens* up the inside, when all the contrivance they have, cannot do the same upon the outside thereof. Methinks they should have indeavoured to have extricated themselves, and the world from these suspicious doubts, before they had impos'd their *Thesis*.

12. For, by this supposition, a great part of Rain-Water, falling (for the supply of Springs) sinks down, by secret passages, into the Earth; What then must force this Water, contrary to its natural inclination up the bank, to make it spring forth out of the tops of Hills, and high places? Surely the contrivers of this *Hypothesis*, had not their eyes every way, did not cast about, to salve all the incident *Phænomena* of this Doctrine. All the reason I find Dr. *Wittie*, gives, for its Ebullition out of the Earth, is a tendency towards its proper place, which is the convex part of the Earth: By which, it should seem, that the Water (while in the Bowels of the Earth) is out of its place, and therefore must by a certain force, *ab extra* as to its self, be reduc'd to its natural place. What this should be, that may make the Water recoyle, or drive upward, contrary to its own Nature, the Doctor would have done well to have assign'd; For no body can be suppos'd to have a natural tendency, in that where a force is impos'd; but here is a natural tendency to the proper

proper place, viz. the convex part of the Earth; and yet this is carryed upwards, a contrary motion to that that is proper to water: so that, in good earnest, it implies no less then a tacit contradiction.

13. For he expressly saith, That the Springing forth, or Eruption of the Water, is not made by any forcible agitation, compulsion, or violence that is put upon it, *ab extra*, within the Earth &c. but from its own natural inclination, and tendency towards its proper place, viz. the convex part of the Earth: and yet these Springs sometimes break forth, in the top of high Hills, and in the uppermost part of high Heaths, as (to go no further) that of *Knarsborough Spaw* (the vitrioline I mean) is a pretty strong Spring, and yet is upon the uppermost part of that high Heath, which in the greatest droughts, ceaseth not to spring: so that He and the followers of this opinion, must of necessity grant, that either it is not improper, for water to ascend, and then they must assign the true efficient causes thereof, that forceth Water, after it has fallen from the Clouds, and sinks into the cavities of the earth, up again to the *Superficiës* thereof; and that too, to the tops of many high Hills: Or else they must retrieve their Opinion, that the convex part of the Earth, is the proper place of the Water: For if water (as in many Springs it's found) ascends, and breaks forth above the level of Plains, (and that too without any compulsive force) is a more firme argument, that the Water (whilst there) is rather in its proper place, then when thrust forth into *declive* Places, along the convex part of the earth, where it doth forthwith undergo *Hydraulick* Laws, is ponderous, and runs down any *Declive* Current.

14. The arguments, Dr. *Wittie* urgeth, for the confirming his Opinion of Rain, and Snow-Water, to be the Original of Springs, are Three. The first of which is, because it is found by experience (saith he) that Fountains, and consequently Rivers, are greater, and do abound more with Water in Winter, and moyst weather, than in Summer. To which I answer, That it's granted, that they do (indeed) abound more in Winter, and moyst weather, but yet I deny, that therefore it should follow, That Fountains, and Rivers should have their Original therefrom: For it is onely Land-Springs, or (at the most) a Co-incidence of them with some few Quick-springs, that receive so great increase from Rain, and Snow Water, as joyned with *declive* Currents of Water, that run down Hills, Mountains, and other steep Places; which fill Rivers, make them overflow their banks, and drown the Fens, and other low grounds, in Winter, and sometimes in Summer, by great sudden falls of Rain-Water: whereas Quick-Springs (saving their additional, the Land-springs) are the same then, as at other times: I mean as to their own Channels, from their proper source.

15. Secondly, In those years, when great floods of rain do fall in Summer, and great store of Snow in winter we find (saith he) Springs durable, whereas in droughty Seasons, when there is but little, or no Rain, or Snow, the Springs dry up. To which I answer, that first, as to the durableness of those *Fontes perennes*, the sudden falls of Rain contribute nothing; and that, because they indure after the draining away, and exhausting of the Land-Springs by continued droughts: Whereas if the continuance of these Quick-Springs, did depend upon those falls of rain; then would they, in great droughts (being
denyed

denied of their supply) also (as I said before) cease. The great plenty of water in wet Seasons, do indeed (as I said) set the Land-Springs a-flote (yea and begets other Springs that appear not at all in other Seasons, witness the *Gypsies* in the *Wolds* in *York-shire*) which by the in-lets of Channels each into other, may, for a time, increase the current of Quick-Springs, but adds nothing at all to its durableness; for the earth is no sooner dreyned of the superfluous water; which come by great falls of wet; but the living Springs (as they may not improperly be call'd) are reduced in *statu quo prius*.

And, as to what he saith, That in droughty Seasons, when there is but little or no Rain or Snow, the Springs dry up. As to the truth thereof, I shall (I say) appeal to the observations of all such Persons as have taken notice thereof. A sure Proof of which, we had (he saith) in *England*; in the Years, 1654, 55 and 56, when our Climate was dryer than ever any Stories mention; so as, we had very little Rain in Summer, or Snow in Winter, most of our Springs were dried up, even those sorts of Springs we call *Fontes perennes*: which (I say) as to matter of fact, the Country-People can testifie was not so: and though I grant, many Springs were, through the drought and penury of Rain-water dried up, yet do I deny these to be Quick-Springs, excepting some few, which (as I said before) might be diverted by the extream dryness of the adjacent thirsty ground, which might drink it up as it came; or by having its Auxiliaries of a Land-Spring drawn off, or lastly, by having its current intercepted and carryed by longer stretch'd Subterraneal Channels into other Springs. I must confess that it's more than probable that those Land-Springs, which are ordinarily fed by Snow and

water, and which supply many Draw-Wells, were (indeed) dried up, for the most part, in those drougthy Seasons: but that the true Quick-Springs, those I mean which always run along the *Sabulum bulliens*, or bubbling Sand, should be dried up in drougthy Seasons (excepting as aforesaid) is neither agreeable to reason, or observation.

17. A third reason, which (saith he) perswades to this original from Snow and Rain, is, Because in those Climates and Countries where little Rain falls, few or no Springs and Rivers are seen, as in the Desarts of *Ethiopia*, and in most parts of *Africa* near the *Equinoctial*, they have little water. To which I answer, That though this seemingly be the most cogent Argument that Dr. *Wittie* urgeth for the vindication of this Opinion; yet I see no more that it evinceth, than this (*viz.*) That in those places where there are but rare falls of Rain-water, those Auxiliarie helps, and conveyances by Land-Springs (which in other places by great dalhes of Rain, fill other Rivers very plentifully) are mostwhat cut off, and the simple Quick-Springs are left solitary, which as such cannot make many Rivers, nor much swell those already made.

18. Hence in *Egypt*, where it Rains very seldom, they are supplied, instead thereof, by the overflowing of *Nilus*; whose River begins to arise on the the Seventeenth of *June*, swelling by degrees until it mounts to (sometimes) Twenty four Cubits, though heretofore Sixteen was the most it attained to, represented by that Image of *Nilus*, having Sixteen Children playing about it, brought from thence and dedicated to the gods by *Vespasian*, in his Temple of Peace, and now to be seen (as *Sandys* in his Travails saith) in the *Vatican* in *Rome*.

19. Which constant rising of *Nilus* at such a day (as

(as aforeſaid) is imputed by *Diodorus Siculus*, unto the abundance of Rain falling on the *Æthiopian* Mountains for Forty days together, at ſuch time, as the Sun approacheth *Cancer*; which is affirmed to be true (ſaith *Sandys*) by the Inhabitants of *Ægypt*, who receive it from Strangers, frequenting *Cairo*, from ſundry parts of *Æthiopia* and *Libya*, who come down with the flood, and bring with them Slaves, Monkies, Parrots, and ſuch like Commodities: Alſo before that time, for divers days, the Air is troubled, being full of black and ponderous Clouds, with a continual rumbling, threatening (as it were) to drown the whole Country, yet ſeldom ſo much as dropping, but are carryed Southward by the Northern Winds, which conſtantly blow at that Seaſon.

20. Now theſe Clouds, being kept together by theſe Northern Winds, and not ſuffered, by the force thereof, to be let down upon the Country of *Ægypt* in ſhowers, are upon the reverſion of the *Peroledt*, the ſoft Southern, or South-Eaſt Winds, wheeling from an other point, make the hovering Clouds diſcharge themſelves in great Rain for many days together, which falling upon the Mountains of *Æthiopia*, are partly waſhed down from the Mountains, immediately into *Nilus*, and partly (running into intermediate Channels and Rivulets amongſt the hills) are, at length, conveyed into *Nilus*, which together make the River gradually to ſwell, from the Seventeenth of *June*, until the beginning of *Auguſt*; at which time, they cut the banks, and let it overflow the whole Country, for the enriching the Soyl thereof.

21. Now that the overflowing of *Nile*, is from Rain let down near the head thereof (which is found to be in the Province of *Agas*, near the Kingdom

of *Goiã*, in the Land called *Sabala*, in the top of a Mountain (whose Diameter is not past one Foot and an half) is (I say) further apparent, because the temperature of the Air, all over the Country is the same at that time as it is in other places, where Rain falls in moist Seasons: For we see in our own Island of Great *Britain*, where Rain happens frequently, that for some days together the Air will be so cloudy and moist (and yet kept off from showers by Winds that bear them up) as that it moistens the walls and floors of Stone-buildings, and make the stones look wet and moist, as if it had actually rain'd upon them, when not a shower has happened for many days together.

22. In like manner (I say) the temperature of the Air in *Egypt* at that Season is very moist, yea so moist, as though we suppose it did rain, yet could it not be much more moist; a Demonstration whereof, is this following Experiment, *viz.* Take of the earth of *Egypt*, adjoyning to the River; preserve it carefully, that it neither come to be wet nor wasted; weigh it daily, and you shall find it neither more nor less heavy, until the Seventeenth of *June*, at which day it beginneth to grow more ponderous, and augmenteth with the augmentation of the River: Whereby they have, amongst themselves, an infallible knowledge of the State of the Deluge.

23. So that hence it clearly appears, that great falls of Rain upon the Mountains near the head-Spring of *Nilus*, at such a Season, give increase to that River; and that these Clouds, which contain that great quantity of water (which well nigh would threaten the drowning of the Country) is carryed over the face of the Land by Northern Winds, which meeting with other Winds from different quarters,

ters, are there stay'd, and let down in great abundance upon the Mountains of *Æthiopia*.

24. And whereas Dr. *Wittie* saith, That in *Ægypte* there are no Springs at all, I am very much apt to suspect the truth thereof; For how should the Inhabitants and Travellers in that Country, be supplied with water (who Live and Travel at remote distances from *Nile*) both for themselves and Cattle, their Camels, Asses, &c. The waters they find, must needs be from Springs, and those Quick-Springs too, because no Rain falls on the Country, to cause any Land-Springs or Rivulets therefrom.

25. And although he seems to himself, to give a solution to that objection made by *Seneca*, viz. That the greatest Rain that can fall, never sinks above Ten Foot into the ground; by alleadging that though into the solid earth the Rain sinks not above Ten Foot: yet, What becomes (saith he) of that immense quantity of Rain which continues for many Weeks together, nay oft times for some Moneths, beside the infinite quantity of wet and Snow that is falling all Winter long, causing inundations of water over all the Country round about? Can it be suppos'd (saith he) that Ten Foot of earth will drink up all this water? To which I answer,

26. That in those great and long continued falls of Rain, which cause inundations of water, the greater part thereof falling upon hills, champion and high grounds, runs down into Rivulets, and from thence is conveyed into Rivers, which coming suddenly overflow their banks, drown Marshes and adjacent low grounds, but presently after are discharged into the Ocean. Now that Rain, which falls upon low Fenny grounds, where the water has not that usual current into Rivers, either restagnates upon the *Superficies*,

and causeth Marshes, Lakes, Ditches, Bogs, &c. or sinks into the earth, especially where the crust or course of earthy Clay, is but thin, before an other *Fundus* of Gravel or Sand appear; for in some low moorish grounds, the outward *Fundus* or crust, is a bituminous spongy earth, such are the Turf-Moors into which Rain-water sinks deep; others are of a more stiff Clay or Marle (and those both high and low grounds) which cause Rain-water to restagnate or lye long upon them.

27. So that, It's the difference of Soyls, which makes Rain-water either sink or lye above: where the Soyl is sandy, the Rain sinks presently, and therefore such High-ways are the best to Travel in Summer or Winter. Now (I say) ten foot is deep enough to contain all that which remains after the greatest part is carryed away by Runnels, and divers Currents into Rivers, and those again into the Sea; for I have observ'd that in two or three days Rain it hath scarce sunk a Graft-depth in our Garden-earth. But suppose we should say with Dr. Wittie, That by some secret passages into the caverns of the earth, it should sink much deeper than ten foot: yet we shall meet with two difficulties, the solving of which, will prove Ominous to the Doctor's Opinion of the Original of Springs. The first is, How shall rain-water sink into the earth by empty crevices or clefts, which I imagine he supposeth to be at some distance from each other: Now what is that that must bring the intermediate particles of water (which fall between one crevice or cleft and another) into the distant crevices, He should have done well, to have assigned those particular Conveyers before he had determin'd these crevices. I am apt to think he hath grounded his supposition of these crevices and clefts, from those chinks and clefts in the

the earth, which he hath seen happen in a long drought; as if those were not forc'd by the extream dryness of its *Superficies*, and fill'd again upon the access of Rain, when the earth being moistened, comes together, the Rain sinks no more down those clefts or crevices, than down any other more solid part thereof.

28. Why might not he rather (and that more truly) suppose the earth to imbibe Rain-water as a sponge: where it meeting with capillary veins (as I may call them) or small pores (not clefts or crevices, which are scarce to be found but amongst Rocks, and Rocky Soyls) sinks down by degrees into larger veins, and those into Subterranean Channells, where it makes Land-Springs, which supply many Draw-wells; yea and many of them run into Rivers too, which help to keep Rivers high in Winter time, above the ordinary pitch they are found to be upon droughts.

29. The next difficulty that springs up (which indeed is the most considerable) is, If Rain-water sink much deeper than ten foot into the caverns of the earth (as he supposeth) Then, what shall fetch it up again, to make it supply Springs that are upon Hills or high Heaths, nay upon the very level of Plains themselves? For it must be a *retrograde* motion of the same water, which before descended into such low caverns of the earth — *Facilis descensus Averni, Sed revocare gradum superasque ascendere ad auras, Hic labor, hoc opus*—

30. The next Objection he brings out of *Seneca*, and his solution, evince no more than what we grant, viz. That there may be additional Land-Springs, and that amongst Rocks, which receive their supply from Rain and Snow-water, which upon droughts are dried up, and therefore are not Quick-Springs, whose Original, I shall shortly hint to be otherwise; besides
he

he acknowledgeth that in solid Clay Soyls, it is very rare to find any eruption of water, because such are sad earth, and have few or no caverns or chanel in them: but our Springs, saith he, break out ordinarily in rocky and gravelly ground, especially the best and most lasting Springs, such as we call *Fontes perennes*; which indeed is most certainly true, for they are not found but as accompanied with a boyling gravel or sand, called by *Helmont Quellem* or *Sabulum Bulliens*, which makes nothing at all towards the proving his Assertion.

31. The last Objection he brings out of *Seneca*, is, That in the dryest Soyl, where they dig Pits two or three hundred foot deep, there is often found great plenty of water, which he calls Living-water, as not coming from the Clouds. Dr. *Wittie's* Solution of which Objection is thus, From whence then should it come? from the Sea? Perhaps (saith he) the Sea is as many Miles from that water, as the *Superficies* of the earth is feet from it. Suppose it were (say I) What might hinder, but that water might be carryed from the Sea, by Subterranean Chanel, at far greater distances than so? If Seas communicate with each other (as we shall shortly endeavour to prove) it must be by Subterranean Chanel, many of which must be of far greater length.

32. Perhaps it may come, saith the Doctor, from the Transmutation of Aer into Water; for such a Transmutation, I cannot, saith he, deny: so that (in short) to me it seems as if he hovered between two, whether to ascribe the Original of Spring-water, to the Transmutation of Air into Water, or to Snow and Rain-water; Only he saith indeed, It's most probable to come from Rain; so that, That at the hardest and at the long run carries it; yet that of the Transmutation

mutation of Air into water, is not without its per-
adventure; and that he thinks very well confirm'd too,
by an instance he brings in, which is, We see, faith
he, Churches become wet, before Rain falls, from
this cause. Why, What is the cause? (*viz*) the
transmutation of Air into Water: and truly, I
am apt to believe, that in moyst weather, as sure as
the Air is transmuted into water, which moystens
the Stone-Walls of buildings, so sure is Air in the
Bowels of the Earth, transmuted into Water: yea
and so sure is the Original of Fountains from Rain,
and Snow Water.

33. I wonder the Doctor's Philosophy, in his se-
cond Edition, should not come forth more matu-
rate, then to adhere to this old, and long since
exploded transmutability of *Elements*, which has
no true solide *Basis* to be grounded upon: For if the
watryness we find, in moyst weather, upon stones
of Walls, and Floors of Buildings, be from the
transmutability of Air into Water; and that he informs
us before, that reasons tells us that more then ten parts
of Air, will not serve for the making one of Water,
I think, faith he, twenty would be too little: if so ma-
ny parts (I say) of Air, be too little to make one
of water, and yet so much water is made (accord-
ing to his own supposition) as serves to moysten
Stone-Walls, and Floors, in moyst weather, before
rain; then what must supply the place, and fall into
the rear, of so much transmuted Air: The water
thence made is but as one to ten, or twenty, which there-
fore cannot supply the necessary vacancy, because one
cannot make up nine, much less nineteen: Where-
fore a horrible vacancy would (if this Doctrine were
true) long ere this, have surpris'd the body of
Air.

34. Yea and suppose we should, with him, admit of the possibility of the transmutation of Air into Water, in the bowels of the Earth, for the furnishing of Springs, [for such Transmutation (saith he) I cannot deny], and keep our proportion of twenty to one: What a vast *Vacuum* (long ere this) had the *Mundane Systeme* groan'd under? Which would have impos'd one of these two grand absurdities thereon, *viz.* either the circulation of bodies, one upon another, (requisite for the maintaining the unity, and intirenes of the World) would be intercepted, by the great contiguous *Vacuums*, which must follow, wanting other bodies, so to tear themselves in pieces, as to supply the place of the deficient Air; or else, those who live in the last Ages, or the longest, might have cause to fear, least the same mishap might fall to their lot, as happens to those poor Animals, that get into Squire *Boyl's* Air-pump *viz.* to dye of Spasmes, and Convulsions, through the thinness of the Air, which would be so interspersed with contiguous *Vacuums*, made wider yet by the frequent transmutation of Air into Water, as that we should not be able to live therein: or lastly, we should constantly be expos'd to the same injury, that those are, who travail over the Mountains, call'd *Andes* in *America*, where the Air is so thin, and rarified, as they travayl not without danger of being stifled, for want of Air: and therefore usually they carry Sponges moystened with Water, for the condensing the Air, or the vapours therein; which Air is so dispos'd there to Inflammations, as that Travellers (as the Ingenious *Kircherus* observes) seeme to belch forth flames, and being all in a sweat, appear as if incircl'd with Fire.

35. I must needs (indeed) grant, that the Air hath its *Vacuolums* or little *Interstices*, its texture being like a net, or sponge, by which it becomes the more capable of being as a vehicle, for transmitting rarified Water, and other vapours of the *Atmosphere*, becoming thereby, the better Subservient to the performing the great circulation of water, from the Sea, and Earth; up to the Clouds, and from thence down again, to the Earth: but that the moisture in the Air, should be reputed Air transmuted into Water, viz: That which falls upon stone-walls in moist seasons, is so absurd, as it's enough to confute it to name it: So that we may conclude, that the moisture in the Air, which settles it self upon the Walls, and floors of Stone-buildings, neither is, nor ever was Air: and that the transmutability of Air into Water, in the bowels of the Earth, is impossible; and lastly that Springs, viz. the *fontes perennes*, have not their Original from Rain, and Snow.

36. Thus I have run through the most considerable things which the Doctor offers, in order to the confirming his opinion of Rain, and Snow Water, to be the Original of Quick-springs, and all along (I think) have probably (if not demonstratively) overturn'd his Opinion, together with the grounds, arguments, and reasons thereof. I might (I confess) multiply more words, in prosecuting at large, his whole discourse; but studying brevity, I have couch'd all he hath to say, that is any way pertinent to his purpose; saving the story he relates, out of Dr. Heylin, concerning the Island of *Cyprus*, in the *Mediterranean Sea*, which (without reflection on that worthy Author, who, as well as other Historians may probably take many things upon trust) which

I say, as to the verity of matter of fact, I should very much scruple, *viz.* That a drought should continue so long, as thirty six years, so as all the Springs, Torrents, or Rivers, were dried up; and that in the dayes of *Constantine* the Great: It's very probable, he had it by Tradition, which many times to wing Fame, makes large plumes. That an Island so near the *Mediterranean* Sea should want rain, for 36 years together, would certainly put an ordinary credulity upon the Tenter-hooks, and stretch a *Thomas*, beyond his ordinary pitch; for, of all places, Islands are the most frequented with Showers: And that it should be done designedly by God, upon a miraculous divine account, I do not well understand; because that has its ends, and aims, for the punishing the Natives, where judgements are brought forth, which done, they frequently cease; but here (according to the story) they were forc'd to forsake the Island, and to seek for new habitations; so that probably it may pass for a drought in *Utopia*.

37. And lastly, the two Rarities, he mentions, that are to be found; upon the Castle-Hill in *Scarborough* *viz.* the deep Well, which reacheth to the bottom of the rock, which hath no water; and the spring-Well, which is within half a yard of the edge of the rock, towards the Sea, which never wants water, which (he saith) doth somewhat illustrate the point in hand: The first of which, seems (to me) onely to be a Well digg'd, within whose compass no Channels have happened, and therefore it is dry; for so narrow a compass, as a Well is, may sometimes happen to miss of subterranean Channels. And as for the other, which is so near the edge of the Rock, towards the Sea, which never wants Water, I look upon it as supply'd from the

the same cause, that other digg'd restagnant Wells are, viz. from Land-springs, which are feed from Rain, or Snow-Water, which yet makes nothing in reality, towards the confirming his *Thesis*; for it is no current Spring, to the best of my remembrance: which yet suppose it were, it will not be uneasy to conceive the manner, and way of its supply, when I have propounded what I have to say, in order to the establishing a new *Thesis*, which will be positive to the point in hand.

38. And that is (as I hinted before) from a circulation of Water, in the *Terraqueous* Globe, by the mediation of Subterranean Channels along the *Sabulum bulliens*, from Sea to Sea; yea and from the Sea to the Heads of Springs, and from them into Rivulets, and those into Rivers, and thence into the Ocean; and so circulates round: which also includes an other circle of Rain, and Snow, which first arising by exhalation from the Sea, and Earth, is carryed down again, upon the Earth, and Sea; joyning Issue with rivulets from Springs, swell Rivers, which again discharge themselves into the Sea.

39. So that a Circulation of water is as justly requisite (according to the order, and appointment of the primitive Cause) for the upholding the *Symmetry* of parts, and intirenes of the whole *terraqueous* Globe, as the Cirulation of blood is necessary for the preservation of life, and vital functions in the *Microcosme* or body of man: The earth can no more produce Vegetables, or Minerals without this connatural circulation, of water replenish'd with Celestial influences, than the blood in the body of man can produce Vital, or Animal Spirits, requisite for absolving the functions of life, without its
inbred

inbred circulation: which concatenation of parts, in the circulation thereof, gave cause to some Philosophers of old, to call the world, a great *Animal*; either because that *animarum omnia plena viz.* that the Seeds of all things are at hand, and at the beck of the primitive *Fiat*, always at work; or because of the great *Symmetry* of parts, or coordinate circulations, of the constituent Particles of the World, whose proportions were so exact, and actions upon each other, in the circle of nature, so uniform, as if actuated by some *Panspermion* or universal operative Spirit

—*Spiritus intus alit, totumque infusa per orbem
mens agitat molem*—

40. Not to say, how Analogous the Sea, and *Hydrophylacia*, those great Cisterns of Water, and Springs of the Deep (that in *Noah's Food*, joyn'd Issue with the *Cataracts* of Haven, for drowning the World) are to the heart of the *Microcosme*: nor how Analogous the Channels of the *Quellem* or *Sabulum bulliens*, which cary the Waters into the uttermost circle of the Earth, for the supply of Mineral *Glebes*, Minerals themselves, and Vegetables upon the Green Carpet thereof, are to the Arteries, in the body of man; by which the blood circulates from the Heart, for the nourishment of the whole: nor yet to determine the analogy of these circulating Waters, further drawn up, by Solar exhalations, which clime up the slender Threds of Aereal *Syphons* into the *Capitol* of the Air, to be impregnate there with Coelestial influences, or Animal spirits, (if I may so call them) which cohobated upon their own body, promote vegetation, yea and animation too, by becoming that *cibus occultus in aere*, of which, the *Cosmopolite*, and other *Hermetical Philosophers*, discourse at large: I say, not to determine
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the Analogy of these Waters, replenish'd in their circuit with Heavenly influences, with those Animal Spirits in the little World, *Man*, which in the Head, receive a determination, for obsoleting the functions of sense and motion

41. Nor lastly, to determine thoroughly the Analogy of water (whilst circulating in the bowels of the Earth, along the Channels of the *Sabulum*) of the blood, whilst circulating in the Veins and Arteries of the humane body: though (I confess) to illustrate this Point, will not a little conduce, to the solving some *Phanomina*, incident to our *Thesis*.

42. And first, we see that blood (whilst circulating in its proper vessels) knows no such difference either going up or down; For it to ascend the *orta*, and from thence up into other Arteries, which are carried into the Head and Arms, is the same, as to descend by other Vessels, into the lower parts. The nourishment, the blood gives, in the habit of the body, whether carried upwards, or downwards, is the same: as it ascends (with as quick a motion) as it descends, and that because it's carried in its own proper vessels, and mov'd by the *Systole* of the heart, whose vibration in all parts (whether upwards, or downwards,) is equal.

43. Now in like manner, Water whilst circulating from Seas, and the *Hydrophylacia*, and carried in its proper Subterranean Channels, along the *veles*, is in its proper place, and becomes the Mother of Mineral Earths, Minerals, Metals, Stones, and Marcasites; and so long knows neither up, nor down; and can as easily (whilst in these Channels) climb up the tops of Hills, and Mountains, and there make Springs, as break forth in Valleys, and in the Level of Plains: yea it can as well mount the tops of Hills, and high Heaths, as the blood

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43. Now in like manner, Water whilst circulating from Seas, and the *Hydrophylacia*, and carried in its proper Subterranean Channels, along the *Quellens*, is in its proper place, and becomes the Mother of Mineral Earths, Minerals, Metals, Stones, and Marcasites; and so long knows neither up, nor down; and can as easily (whilst in these Channels) climb up the tops of Hills, and Mountains, and there make Springs, as break forth in Valleys, and in the Level of Plains: yea it can as well mount the tops of Hills, and high Heaths, as the blood

in the Arteries, can ascend into the head: and all by the natural circulation of Water, set on work by the Original *Fiat*, for the upholding the functions of the *Terraqueous* Globe, where (if such a thing be *in rerum natura*) you may view the Perpetual motion.

44. Now that the *Quellem*, or *Sabslum bulliens* is the proper Conduit, and Subterranean Channel, for water to circulate in, whilst in the bowels of the Earth, is hereby apparent, That a true Quick-Spring, never breaks forth, but this sand also appears; yea where ever any dig in the Earth for the said Springs, they are not found, but at the bottom or verge of the *Fundus* of Mineral Earth, Clay, or marly ground, where sand is alwayes seen to break up, with the living Spring, which frequently breaks forth under the Channels, and banks of Rivers (whence it is that plenty of sand is wrought up in Rivers) also in Plains, Valleys, Heaths, Hills, and Mountains, or in any places thereof, digg'd for Springs, are found, (as I said,) store of this Sand.

45. And that there are Subterranean Channels, by which Sea's, at great distance, communicate with each other, will appear, first, if we consider the Ocean (which is the whole bulk of waters that compass the Globe of earth) is but one, which receives different names according to various Regions it washeth; as *Oceanus Atlanticus*, *Germanicus*, *Denealidonius*, *Septentrionalis*, *Tartaricus*, *Aethiopicus*, *Mare Arabicum*, *Mar di India*, *Mar Del Nort*, *Mar Del Zur*, or, *Mare Pacificum*, *Archipelagus*, &c. And there is no In-land Sea, which receive Rivers, and let none forth visibly, but they communicate with the Ocean.

Thus;

Thus the *Mediterranean* Sea, is join'd to the *Atlantic* Ocean, per *Fretum Herculeum*, and to the Red-Sea by occult Subterranean Channels, as the Story (related by *Kircherus*) of the Dolphin first taken in the Red, and soon after in the *Mediterranean* Sea: So the *Caspian* by the mediation of Subterranean Channels is annexed to the *Euxine*, or black-Sea, and this to the *Aegean*, and that to the *Mediterranean*. Thus these great Seas in *Asia* communicate with each other, according to the mind of *Scaliger*, *Wendeline*, and *Kircherus*: So the *Baltick* communicates with the *German* and *Deucalidonian* Seas by the two Arms, *Bosnicum*, and *Finicum*, per *Fretum Cymbricum*.

46. In like manner the *Asphaltick* Sea or *Mare Mortuum* in *Palestine*, communicates with the Red-Sea, by the same Subterranean Channels, and thereby are conveyed into the Ocean: So the Lake *Zaire* in *Aethiopia*, by the same manner, empties it self into the *Aethiopian* Ocean; And that great River in *Aethiopia* call'd *Fluvius Niger*; flowing from the Lake of *Nilus*, and being shut up; by a Chain of Mountains, in the Kingdom of *Nubia*, where privately breaking forth of the Western part of the Mountains, empties it self by Subterranean *Meaders*; where, meeting with several other Rivers, increase them, and at length is carried into the *Atlantic* Ocean: After the same manner the River *Tigris* in *Mesopotamia*, being carried through the Lake *Arethusa*, meets with resisting *Caucasus*, thrusts down its head, into a large den, and after a great space of ground, peeps up again; where scarce passing the Lake *Thospis*, but it is begirt again with other Mountains; and hides it self again in Subterranean Channels, and breaks forth 24 Miles, on the other side of the Mountains, then continues to

flow, and neer *Babylon* is let into *Euphrates*.

47. Now I say, that these In-land Seas, Lakes, and great Rivers, do communicate with each other, and at length, are carried into the main Ocean; and that this is done by Subterranean Channels, will be apparent as followeth: First that the *Caspian* hath intercourse with the *Euxine*, or black Sea, by such passages, is evident; because it receives into its bosome, a constant flux of great Rivers, and lets none forth (visibly) by any arme into the Sea; and and yet, notwithstanding, is not at all increased; and *Kircher* guesseth, that before the deluge, it might be contiguous with the Ocean, overrunning all the Sandy Defarts of *Tartaria*, and afterwards was broke off by the Chain of the Mountains of *Caucasus*. This is onely conjectural, but however it appears, as if it were a Lake shut up on all hands, having Rivers let into it, but none let forth; and yet shews no footstep of inundation, and therefore, must of necessity, have communication with other Seas by private Channels. The same is also further confirm'd by observation, That has been made upon that Sea (as *Kircher* reports,) by *Paradis Persa* in *Geograph.* viz. that when ever the Eastern Winds have rul'd strongly over the *Caspian*, at the same time in the *Euxine* Sea, the boylings has been observ'd greater then wonted, with a great agitation of the whole Sea: And on the contrary when the Western Winds blew strongly, upon the *Euxine*, the like perturbations have been seen, in the *Caspian* Sea; and when the *Caspian* hath by the agitation of winds, emptied it self into the *Euxine*, it is again replenished by the like secret passages, from the *Persian* Sea, which is done by a kind of *Charybdis*, or *Vortex*, along the shore of the

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Sinus Persicus; whereby the Sea, seems to be (sometimes) drunk up with a notable decrease, which, by a fresh flowing of the Sea, the *Vortex* is hid again: So that the *Caspian*, by Subterranean Channels, receives a supply, from the *Persian* Sea, and by the like Channels communicates with the *Euxine* Sea.

48. That the *Asphaltick* or *Mare Mortuum* communicates, by the same hidden passages, with the Red-Sea, is evident, because, upon the coasts of the Red-Sea, which looks towards the Desarts of *Arabia*, at the noted place, call'd *Eltor* (as the inquisitive *Kircher* relates) where (not far from the shore, from the bowels of the Sea) is found, at sometimes, great plenty of *Naphtha* and *Bitumen* which comes from the *Bituminous* Sea, call'd *Mortuum*, from its *Lentor* or toughness; it's call'd also *Mare Asphalticum*, from *Bitumen*, of which it has great plenty; whose shores have great store of *Bituminous* Pits. Into this Sea *Jordan* runs, which having no other way to empty it self, but by these Subterranean Channels, carries along with it its *Bituminous* offspring into the Red-Sea, and that by a Chanel of 62 Leagues, forso far is the *Asphaltick*, from the Red-Sea. The same happens to all Seas, Lakes, and great Rivers, which receive others into themselves, but let none forth by visible arms, and therefore do it by Subterranean passages.

49. Other Lakes there are, whose *Superficies* lies level with that of the *Hydrophylacia*, and therefore are as Springs of the deep, kept for a reserve, for the furnishing (upon occasion) the grand Circulation: Many other Rivers, besides what are named, do hide their Channels in the Earth, for many miles together, and appear again, as the *Rhine* in *Germany*,

Padus in the *Alps*: but especially *Guadiana*, of old call'd *Anas* a River in *Spain* which runs under ground, in a subterranean Chanel, for 32 Miles together, and breaks up again, which gave occasion to the *Spaniards* to boast of their great Bridge, which will feed so many thousand Sheep: also the River *Rye* in *Yorkshire* (as Dr. *Wittie* acknowledgeth) runs under ground a quarter of a Mile, and then appears again.

50. And as by this Circulation of Water, all In-land Seas, Lakes &c. communicate, by Subterranean Channels, or by visible arms, one with another, and at length with the common Ocean it self: So by the mediation of the same hidden pipes, conveyed along the *Sabulum*, the Water circulates, from the Seas, and *Hydrophylacia* unto the Spring-heads, which breaks forth at great distances, either in Levels, Valleys, Hills, or Mountains.

51. Now to determine the cause of the Waters rising above the Level of the *Superficies* of the Sea, up into the tops of Hills, and Mountains, a motion seemingly (and indeed really according to the *Hydrostatick* Laws of water, considered as *Extravasated*) contrary to the nature of the weight of Water, will be here very considerable, being the main thing, objected against the *Hypothesis* of Springs taking their Original from the Sea. To the better understanding of which, we shall propound.

52. First that this *Thesis* supposeth, and has hitherto partly proved, a Circulation of Waters, or a running round, from the Ocean into In-land Seas, and Lakes, and those into each other, and back again into the Ocean; but whilst running into each other, they also run along other Subterranean Channels, at great distances under the Earth, until they break

break up into Springs, Fountains and Rivers, and those often (as I said) above the Level of the Sea: Now in every Circulation or Circle, there is (strictly) neither beginning nor end, because round as a wheel or ring; so that wherever you determine a beginning in a Circle, there also is the end.

53. But that we may be the more demonstrative, I shall, for better apprehension, determine a beginning of this Circulation; and that shall be from the Sea, and from the efficient cause moving the Seas, which will be the last again in the Circle: and this we suppose to be the Winds, Storms and pressure of the *Atmosphere* upon the surface of the Seas, together with the influence and *Ellipsis* of the Moon, which (probably) gives being to the *Flux* and *Reflux* of the Sea, by causing a depression of the waters, at two opposite places in the *Terraqueous* Globe, and an accumulation of the Seas, answerable thereto, in the two other *Quadrants* of the Globous Circle; which swelling of the Sea, is always opposite, each *Tumor* possessing a whole *Quadrant* of the vast Ocean: these Tumors rowl about the earthy Globe in Twenty four hours, thereby agitating the whole bulk of the Seas, and driving up the waters by the Subterranean Channells into the *Hydrophyl. cia*, and from thence by *Hydragogal Syphons*, up Hills, Mountains, and high Heaths, to the heads of Springs and Fountains.

54. That there is (besides the weight of Clouds, Storms, Winds, &c.) a pressure of Water by Air, is evident in common *Hydrostatick* Experiments; for if you put down a glass-*Tube* into a vessel of water, you will find the water in the *Tube* to be above the level of the water in the vessel, and that for no other cause than that the pressure of the Air upon

the surface of the water in the vessel, is stronger than the resistance of that Ayr that is pent up in the *Tube*; and that it is so, is evident, because if you stop up the upper end of the *Tube* with your thumb or the like, you will find that the Ayr in the *Tube*, not having the liberty of recoyling, becomes strong, and presseth so much upon the water, as that it raiseth up the water in the vessel to such a height, proportionable to the compass of the *Tube*; which I have thus tryed, by taking a pint-white-Viol, fill'd with water to about a fingers breadth of the mouth, into which I let down a glass-*Tube*, stopping the upper end closely with my thumb, the Ayr in the *Tube* would so press upon the water, as that the glass would (in a manner) be quite full: but upon removing my thumb, the water would immediately run up the *Tube*, two or three fingers breadth above the level of the water in the Viol, and bubble up to and again, till it settled a little above the surface of the water in the Viol: and that still because water follows the strongest impulse of Ayr, which while the *Tube* is closely stop'd, bears down the water, and raiseth it on the surface thereof; whereas when the Ayr in the *Tube* has liberty again, then the water being pressed by the Ayr upon the *Superficies* thereof, mounts up speedily above the level of the water in the Viol.

55. So in like manner we see in a Weather-glass which is (suppose) a Globe or Egg-glass inverted into a vessel of water, which if you do, without altering the tone of the Ayr in the glass, the water riseth very little within the *Tube*; and that because of the resistance that is made by the unaltered Ayr in the glass: but if you heat the glass, and thereby thin the Ayr, you will find the water to ascend gradually to a considerable height, above the level of the

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the water in the vessel, which suppose to be done in the foresaid pint-Viol, and you shall see the water five or six fingers breadth above the surface of the water in the Viol: which when cool, set it before the fire, or expose it to the heat of the Sun (so the heat be proportionable) and you will find it descend as fast, as it ascended before.

56. Which argues, That Ayr, when altered by heat, gives a different (and that a less) pressure upon the body of water, than when it is in its natural texture; and therefore, upon the attenuating of Ayr, by heat, in an inverted oval glass, the water seems to be drawn up by a kind of *Suction*, as some would have it, or to prevent a *Vacuum*, as others think: but most probably (if not demonstratively) it ascends gradually, and sensibly, for this cause (*viz.*) That when the Ayr in the glass, which before by heat was attenuated, is either by cold reduced into its pristine form, or having (as so thinn'd) but a languid pressure, is therefore by a more strong *Elastick* force of Ayr, upon the surface of the water, forc'd up, till it come to such a height as the pressure of Ayr within, and that without the glass, are brought to an *Equilibrium* or equal poysure; I mean till the springy power of the Ayr, within and without the glass, be of an equal force, and there it stands, till the springy power of the Ayr within the glass, by heat, becomes dilated, and then it forceth down the water in the *Tube*, and makes the water in the Viol rise higher, proportionable to the degree of the attenuation of the Ayr.

57. That the Ayr receives a considerable alteration by heat, is further confirm'd, by the experiment of inverting a glass *Cucurbit*, over a Candle, fastened with tallow upon the bottom of a glass or earthen *Bason*

son (wherein water is first poured, to the height of two or three fingers breadths) where the heat of the Candle doth so weaken the spring of the Ayr within the Glass, that it wanting the help of the circulating Ayr (always requisite to the perpetuating the motion of bodies) which is intercepted by the body of water, that in stead thereof, the Water it self circulates, being forc'd thereto by the spring of the Air, that presseth upon it from without, and therefore it riseth up to a great height of the glass-body (as I have sometime seen upon tryal thereof) and puts out the Candle: which Experiment seems somewhat to contradict the former of a Weather-glass, though in reality it doth not; for although there heat makes it descend, but here it makes it ascend: yet if we consider, that in that of the Weather-glass, the Air in it is first thinn'd by heat, before the glass be put into water, and therefore when it's condensed by cold, it draws up the water, or rather, the water is forced by the outward Spring of the Air, and follows it to an *Æquilibrium*; but in this last Experiment the glass is inverted into water, without any previous alteration of the Air therein: which being to supply the motion of a body, *viz.* the burning of the Candle, doth it for a while, but wanting a fresh supply from other Air without, to promote the Circulation thereof (always necessary for the motion of bodies) the want thereof makes the strong spring of the Air upon the surface of the water, to force up the water it self, into the glass-body: From which Experiments, result these following Corollaries, *viz.*

First. That a Circulation of Air, is requisite for the motion of all bodies; the Candle in the glass we see extinguisheth for want thereof, by forcing up the water in lieu of Air.

Secondly.

Secondly. That Air may be attenuated by the heat of the Sun, whereby the same portion of Air may be made to extend it self over a larger space, witness the heating the glass, in the first of the two last Experiments.

Thirdly. That this Air thus attenuated and extended by the heat of the Sun, is the reason why culinary fire dies or goes out, when the Beams of the Sun are cast upon it, because they thin the Air, and the Air is the natural Bellows of Fire, which Fire burns according to the intenseness or remissness of the Air.

Fourthly. That the Air thus thinn'd, makes way for water to ascend up the small veins thereof, which are like so many slender *Syphons*, by which it mounts from Earth, Waters and Seas up into the Clouds, for the supply of Rain and Snow; which *Syphons*, in drougthy hot weather, are most what at work, carrying it upward, whereas in moist weather, the water descends by the same *Syphons*, and moisten the Ground with Dew, and Walls or Floors of Stone-buildings, in wet Seasons: so that the reputed Exhalations of moisture by the Sun, for the supply of Rain, is no other than this gradual steaming up of slender *Syphons*, whereby water mounts insensibly the uppermost part of the *Atmosphere*.

Fifthly. That in great heat of weather many Diseases happen through the thinness of the Air; for the Air in the Lungs, is the Bellows of the vital Fire in the Heart, which if it become attenuated, either through a general heat in the Air (whence ariseth frequently some *Epidemical Disease*) or through the obstructions of the Lungs themselves, whereby the Air, for want of soundness of Organs, becomes thinn'd before it come to volatize the Blood, in its
current

current from the right to the left Ventricle of the Heart, causeth *Faintings*, *Lassitudes*, *Cordialgia's*, *Asthma's*, *Deliquiums*, and (in Women) *Swoonings*, *Palpitations*, rousing up the *Spleen* and *Mother*, &c. yea (in fine) makes the Lamp of Life burn dark and dimly; whereas the Air, by cold, being reduc'd to its pristine form, and the Lungs freed from obstructions, quickens the vital Ferment, sharpens the appetite, makes the vital Fire burn clearly, and makes evident, that the Ferments of the several Digestions are vital; for in cold weather, we find our appetites more acuated, our Ferments more vigorous, and the Digestions more powerful. But I will not (though I might) here further enlarge to shew how the Air in a due order, contributes to the invigorating the Ferments, and how much it conduceth in the change thereof, towards the curing Diseases. But I proceed.

Sixthly. And (which chiefly concerns our present purpose) assert, That the heat of the Sun, contributes (by thinning the Air) towards the circulation of water, from Seas to Springs, and from water upon the earth, to Clouds; For the Sun whilst he is (suppose) in the Northern Signs, especially towards the Tropick of *Cancer*, casts his rays pretty powerfully upon those Places, which are within the oblique position of the Sphere (though not perpendicularly, as it happens to those Places, situated under the right position of the Sphere, where the *Aequator* cuts the *Horizon* at right Angles) whilst he is (I say) in the Northern Signs, by his heat he thins the Air of those Regions; especially, as those Places fall under the *Meridians*, as some Places must alwaies do (the Sun in his supposed Diurnal Circuit, making Twenty four *Meridians*) the Air under these *Meridians* (especially

ally in those places where the Sun is, or inclines to be *Vertical*) being attenuated, makes the Air circulate the more strongly towards the other *Quadrants* of the *Terraqueous* Globe, causing there a stronger pressure upon the Surface of the Seas; and this must be constantly done, because the Sun (really, or apparently) is alwayes in motion about the Earth, who in his Circuit thins the Air of those Places, which lie most directly under his Beams, and so makes the Air (as I may say) split it self (I mean as to its uniform texture) towards the Poles, where it causeth a constant pressure upon the Northern and *Atlantick* Ocean, and upon the *Mare del Zur* or *Pacificum*, towards the South; as also driving the Clouds (whilst he is Northern) into the South side of the *Aequator*, enough almost alone to give Being to Springs, by forcing the water along the Subterranean Channels, up at great distances upon the Continents.

Seventhly. That Air, attenuated in one place of the *Atmosphere*, is as much condensed in an other part thereof; and what it is deficient of force in that thinn'd part, so much more it is of force in the other; so as to give a proportionable pressure, answerable to the weakness of its Spring elsewhere.

§ 8. Now the natural pressure of Water by Air, and of the upper parts of water upon those below, is by perpendicular lines; and that by *Vortices*, as *Archimedes*, and after him *Des Cartes* and *Kircher* demonstrate: Natural (I said) because accidentally by Winds or Storms, the motion may be oblique; so that supposing the Seas to be at their bottom perforated in many places, with Subterranean Channels and secret *Vortices*, the surface of the Sea being press'd with Winds, Clouds and Storms, the circulated and condensed

condensed Air (which recoyls from the other thinner part of the *Atmosphere*, where the Sun-Beams have attenuated it) together with the oblique motion of the Flux and Re-flux of the Sea, begins the motion towards the grand Circulation.

59. For the *Superficies* of the Ocean being press'd by the foresaid weight, sends down its water by Subterranean Channels into the *Hydrophylacia* or common Cisterns of water, which are the Springs of the Deep, where it not only comes to a level, with the surface of the Sea, keeping a *Horizontal* Parallel therewith (which any water will do in a *Syphon* or duplicated *Tube*, though unassisted by any considerable pressure of the Air) but also, by the force of the pressure upon the surface of the Sea, it is easily carried up above the level thereof, into Hills, Mountains and high Heaths, which breaking forth, give Being to Springs and Fountains, which run into many Rivulets and from those into larger Rivers, especially joyning issue with Rain and Snow-water, and from Rivers are again carried into the Seas.

60. That this is a Circulation, whereby water is carried in a round, is apparent, because the Seas being press'd by the foresaid natural Causes, are carried, by Subterranean Channels, along the *Sabulum bulliens*, breaks forth at Spring-heads, in Valleys, Hills or Mountains, runs along into Rivulets, which, with showers, moisten the earth, and then carried up again by Aereal *Syphons*, in drougthy Seasons into the Clouds, makes the *Atmosphere* ponderous, which, together with Winds out of Subterranean Caverns, and the strong Spring of the Air, recoyling from the rest, attenuated by the heat of the Sun, together with the Current of all Rivers into the Sea: All these (I say) joyntly together, conspire the pressure

sure of the Seas again, into the heads of Springs; and so still more on in a circular motion: and that in order to the supplying the grand Concerns of the *Terraqueous* Globe, both for Mineral and Vegetable productions.

61. That the Air doth press, is evident in *Pneumatick* Engines, as that of the Wine-Coopers Bellows, which will by the meer pressure upon the surface of Wine from Air, force forth the Liquor into other vessels; the same happens in Pumps, which by forcing forth Air, carry up the water; as also if a pair of Bellows be so contriv'd, as to be plac'd over a vessel of water, closed up on all sides, with two Pipes going to the bottom of the vessel, so ordered as whilst the one Bellows is drawn up, the other falls down with its flap, which, pressing upon the surface of the water, makes it yield, which finding no other way, will mount up (suppose two Pipes which are carried into a Cistern at a competent distance) above the vessel, which again being let forth by an other Pipe at the opposite side, falls into a chanel, which carries it upon a Water-wheel, and gives motion (suppose) thereto; the *Axis* of which, turns about a square handle, to which is fastened the handle or pole of the Bellows, poys'd upon a leaver, plac'd equally betwixt the two Bellows: so that as the water runs out of the Cistern it turns about the wheel, and that moves the Bellows, which pressing the water in the vessel, forceth it up again into the Cistern, and so in a round; whereas if it could so be contriv'd, that this water which moves the wheel about, should by an other chanel, be conveyed into the top of the water-vessel, it might give a good probability of finding out (at least fairly hinting) a *Perpetual Motion*: A Type of which may be seen in *Kircherus* his *Mundus Subterraneus*.

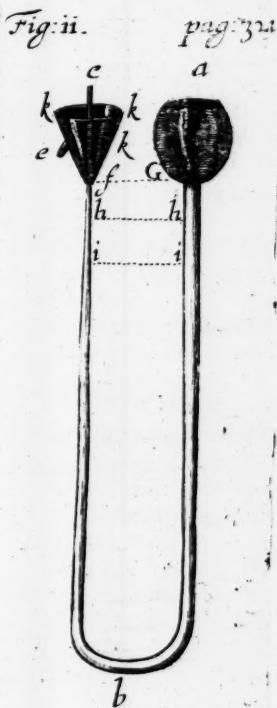
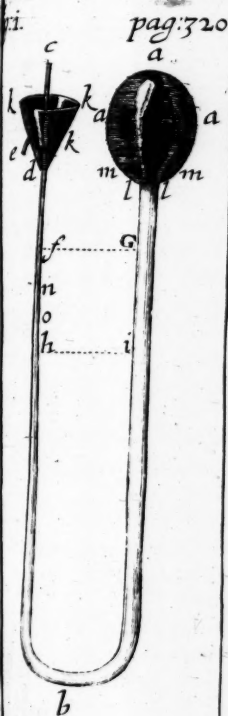
62. So

62. So in like manner, the surface of the Seas, being press'd by the foresaid causes, which jointly together conspire its pressure, as the bellows doth the water in the Vessel, they force it up along Pipes, or Subterranean Channells, to the Head of Springs, and Fountains: Which Pipes, by how much the more they are oblique in their windings, by so much the more easily, the Water is carried up to the tops of Hills, and high Grounds.

63. And as the Air, by its own innate Spring, doth press, so sometimes it becomes more weighty, by having the burden of Clouds lying and pressing upon it, which also contributes to the former pressure upon the surface of the Sea; For we see, that when the Clouds are about to discharge themselves in Showers, and that in large drops, that they so compress the texture of the Air, as they cause a Wind commonly to go before each Shower, which is nothing else, but a *Latio Aeris*, or Motion of the Air, from the pressure of the Clouds, and the greatness of the drops, which compress the Air, and bear it down, till it hath made its thorough passage to the Earth, whereas, when the Rain comes down in small drops, and thin threads, it passeth gently through the *Vehicle* and *Colander* of the Air, without any considerable pressure thereof.

64. Now for further Demonstration, let this following experiment be observ'd, where suppose (See Figure 1 in the Scheme at the end of this Book,) an Oval Glass, with a long neck, revers'd signified by *a, b, c*, and a Glass *concha* annexed thereto, by *k, k, k*, with a little Pipe noted by *e*. Now let us imagine the Oval Glass first to be heated, whereby the Air contain'd therein, becomes thinn'd: then immediately let water be poured in at *c*, by a Glass-Funnel,

nel, till the Tube is fill'd at the parallel *F, G*, where



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nel, till the Tube is fill'd at the parallel *F, G*, where the Spring of the Air in the *Oval A, A, A*, is so weakened, as that when the cold gradually comes, the Air centering it self thereby, the water in the Tube falls from *F* to *N, O*, or *H*, and riseth up as much from *G* to *L, L*, or *M, M*. But when the Spring of the Air, in the same *Oval*, is set fresh a work again by heat, it gains a fresh pressure, and forceth down the Water from *M, M, L, I, G* to *I*, and raiseth up the water answerably, in the other side of the Tube, from *H* to *O, N, F*, and thence to *K, K, K*, and *C*, where it comes forth into the *Concha*, and thence runs out at the Pipe *C, E*.

65. So in like manner, the Air in the *Atmosphere*, presseth by its Spring, set on work by the foresaid causes, upon the Surface of the Sea, which lyeth in Right-Lines with the *Hydrophylacia*, according to the Line *F, G*, which may represent the level-surface, both of the Sea, and springs of the deep: Which being press'd at *G* towards *I*, raiseth up the Water, from *F* towards *C*, which represents high Hills, and Mountains; where Springs break forth, either at *C*, or *E*. Hence we see, that as the Spring of the Air is invigorated, or weakned; so its pressure upon water, is more or less.

66. The second Figure (See the 2 Figure of the Scheme) is the same, save the *Oval* which it wants, having instead thereof, a small *Concha*, where the Air from without has a free pressure; and that part of the Tube to be larger, and the other part revers'd, to be much smaller: which suppose to be fill'd with Water at *A*, where by the Solitary pressure of the Air, contain'd within the cavity of the Tube, made by the Palm of the Hand laid thereon, forceth the Water, which is in the Pipe *A, B, C*. with a great

sure, from *F* to *C*, and that too, a great Height above *C*: in the same manner the Air in the *Atmosphere* being pressed with Winds, Storms, Clouds, and condensation thereof, and the like causes aforesaid, forceth upon the surface of the Sea (which with the *Hydrophylacia* are alwayes at an *Equilibrium* according to the Line *FG*) beyond the *Equilibrium FG*, into the *Conchas* or Mountains *E, K, C*, which are much higher then the Mathematical Circle of Water (I mean then that circle of Water, from which all Lines drawn to the Centre, are equal): So that, supposing a constant pressure, upon *A*, or *G*, which is certainly done at all times by some, or all of the foresaid causes, the Water must as constantly be press'd from *F*, to *K*, and *C*, and there as certainly make Springs to break forth: for from the same causes alwaies at work, the same effects are alwaies produc'd.

67. Hence the great difficulty may easily be resolv'd, why Springs are sometimes found upon the tops of the highest Mountains; and that because the bulk of Waters, to be carried above the *Equilibrium FG*. is in a manner insensible, in comparison of the great weight, and pressure of the Water in the Ocean: and that thus (as the ingenious *Kircher* computes) that the *Semidiameter* of the Earth is 3600 Miles, of which 60 answer to every Degree of the *Equator*: which *Semidiameter* is computed from the *Superficies* of the Sea, where the lines (as I said) from any part thereof to the Center, are equal: and seeing that the *Basis* of Mountains are level with the Mathematical globous earth, so that the tops of these Mountains, must be very protuberant: Therefore it onely remains to be demonstrated, how much higher the Sea ought to mount beyond its *Equilibrium FG*, or *Periphery* of its globous circle, to make Springs break forth on Mountains. 62.

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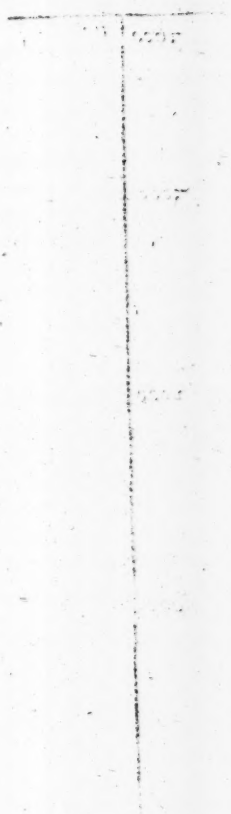
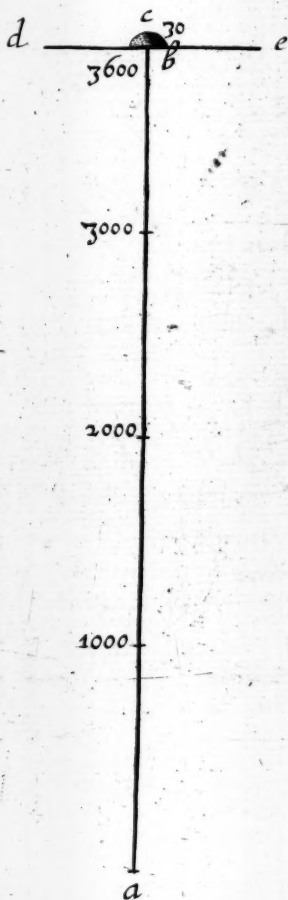


Fig. iii.

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68. To which purpose, suppose the line (See the 3 Figure in the Scheme) *A B* to be the *Semidiameter* of the Earth, 3600 Miles long, which terminates in the line, *D, E*, which cuts the *Superficies* of the *Terraqueous* Globe in the point *B*. Now suppose the height of the tallest Mountain, to be *C*, which added to the *Semidiameter* of the Earth, *A, B*, will produce the line *A, C*, which expresseth the top of the highest Mountain: Therefore as *A, B*, is to *B, C*, so is the *Semidiameter* of the Earth, to the highest Mountain, so is 3600, to 30, with which computing the immenseness of the surface of the Ocean, pressed on all hands with the foresaid causes, makes it very easie to apprehend, how readily Water may be carried from the Seas and *Hydrophylacia*, to the heads of Springs in the highest Mountains.

69. For the proportion, betwixt the *Semidiameter* of the Earth 3600, (together with the vastness of the immense Ocean, forc'd by the Spring of the *Atmosphere*) to the Line, *B, C*, viz. the top of the highest Mountain 30, is in a manner insensible; and the more insensible, by how much Hills, or Mountains are less in height then 30 Miles: inso-much that (as the learned *Kircher* observes) the Picke of *Teneriff*: *Olympus* in *Asia*: *Ætna* in *Sicilia*: *Caucasus* in *Asia*: *Otho* in *Macedonia*, would as to their proportion, with the vast Ocean, disappear: whence he concludes, (*Unde infero* (inquit *Kircherus*) *Oceani aquas, sive fluxu refluxuque, sive tempestatibus, ventorumque vi, sive nubium descendu pressas, nullo negotio, etiam in altissimos vertices montium, ejaculari posse.*

70. And as this pressure of the Sea, by the said causes, is constant, and as constantly keeps Springs, and Fountains in flowing upon Mountains, and re-

mote places upon Continents, so also thereby the *Hydrophylacia* are alwayes kept fill'd, from whence, as from a Store-house, the *Alps* comprehended by *France, Germany, and Italy*, pour forth so many Torrents, and Rivers, which by a perpetual current never have ceased, nor never will (as long as the Wheels, and Springs of Nature, are kept at work, by the Great Master *Mechanick* of the world) cease to flow: from which Springs of the deep, *Danubius, Rhenus, Mosella, Mosa, Rhodanus, A-rar, Padus, Ticinus*, together with other smaller Rivers, have their supply.

71. Besides, Some Springs seeme to emulate the Flux, and Reflux of the Sea, as that which *Pliny* tells us of, in the *Gades*, which observes the motion of the Sea, in ebbing, and flowing: and perhaps that in the Peake of *Derby-shire*, may be from the same cause, which ebs, and flows every 12 hours: And how *Dr. Wittie* comes to be sure, that this last (together with the Spring at *Giggleswick* in *York-shire*) hath no correspondence with the Sea, he might have done well to have inform'd us, that we might have been as sure as he.

72. As for the Spring at *Giggleswick*, which ebs, and flows many times a-day, we may (perhaps not unaptly) attain to some Foot-steps of the knowledge thereof, if we remind (what I have already delivered above,) viz. that if a glass Tube, stop'd close at the one end with ones Thumb, and the other end let down into a Vial, or other vessel full of Water: as soon as ever the air gets liberty, by removing the thumb, the Spring of air from without presseth up the Water 2, or 3 Finger breadths above the Level of the Water, and bubbles up to and again for a while, then settles to its ordinary pitch; which

which is an exact resemblance of the Spring at *Giggleswick* and such like.

73. For in these Springs, the Air is so pent up, by the streightness of the Channells near the Spring-head, and by the denseness of some interposing *Glebe* of earth: which may, and doth probably for a time, very much, (though not totally) intercepts the motion of the Air, which hinders the Spring from flowing alwayes to high, (as if the Air had liberty it would) therefore it onely flows at that time, when the pressure of the Water forceth it through the dense Earth, and gives thereby liberty for the Air, which before was pent up: for we see in all *Hydrostatick* Experiments, that water follows Air, as well as Air circulates after Water; and that Water alwayes obeys the more strong impulse of Air, though it be to ascend to a great height.

74. Now having run through all the causes, and demonstrated the reasons of those causes, which promote the grand Circulation of Water: it is now time to consider the final End, Aim, and Intention of the first Mover in Nature, who sets all these Wheels, and Springs a going, in the great Clock-work of the World, and who orders all things in Time, Weight, and Measure; and that to the end, that one part, and Wheel, may mutually promote the motion of an other, that all the parts, and motions thereof, may joyntly conspire the good, and intirenes of the whole. But that we may (in some few particulars) view the Wisdom of God, in ordering this Circulation of Water; and that it is not done in vain; but hath its various uses, and those of larg extent, for the benefit of man, and other Creatures, and that as followeth.

75. First, Waters, by this great Circulation, are

kept from putrefaction, and corruption; motion being to Waters, as it is to the vapours in the Air, *viz.* hinders them from corrupting, and as wind fan the Air from putrid vapours, so motion keeps Water from *Stagnating*, and consequently from putridness: and therefore a peice of raw flesh, laid in a constant current of Water, will keep from corrupting a considerable time.

76 Secondly, In times of drought, when Land-Springs are mostwath dried up, These *viz.* the Springs, Rivulets &c. contain'd in the great Circulation, serve for the use of Man, and Cattle; and that in places, at great distance from large Rivers: for the Quick-Springs, constantly moving in the great Wheel, are never dry, and that by reason that, where the cause doth perpetuate, the effect must do the same, but the causes as aforesaid are alwaies at work; therefore Springs (I mean Quick-Springs) must never fail, as long as the Fabrick of the World is upheld by the same *Fiat*, as at first.

77. Thirdly, By great Rivers, which are made of Rivulets, and Fountains, which in the great Circulation, run thereinto, we can easily pass from one Place; and Country, into an other; and that by Oaken vessels, which if the Water, whether in Rivers, or Seas, were *Stagnant*, could not move thereon, half so well: so that in Ships, by the motion of the Sea, and Winds, we visit forreign Countrys; and the Merchants Traffique abroad, and that for a general good of Mankind.

78. Fourthly, By this grand Circulation, all Mineral Springs, for the health of man, are produc'd; For the Water circulating in the bowels of the earth (being pressed by the foresaid causes) as it meets with various Mineral Earths, and Salts, becomes

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impregnated with the Tinctures, or taſts thereof, making ſome ſlight ſolutions of the Mineral juices into it ſelf, paſſeth on to the head of the next Spring, where breaking forth, makes *Spaws* of different ſorts, as *Vitrioline*, *Alluminous*, *Nitrous Salinous*, *Sulphureous* &c, according to the nature of the mineral *Glebe*, the Water paſſeth through to the Spring-head, whence is the great variety of Waters

79. Fifthly, Water by this great Circulation in the bowels of the Earth, being diſpers'd (as I may ſay) by capillary veins, into the whole habit of the earthy body, is coagulated by various Ferments and Specifick Mineral, or Metalline Seeds, into ſuch like Bodyes. For (as we have elſe where demonſtrated) Water is the Material ſubject of all Minerals, and conſequently of Metalline Bodyes; and that it needs onely different Seeds, with their various *Archeal* Ferments, to ſhape it into all ſorts of bodyes, found in *Vulcan's* ſhop, each according to its Seminal difference. For from whence proceeds the great variety of all Stones, *Marcaſites*, Minerals, Mineral Earths, Metals &c. but from Water ſhap'd by Seeds, and Ferments into bodyes under various diſguiſes? Which here, by this grand Circulation, is alwayes at hand, and ready for the Seminal *Faber* or *Vulcan* to work upon.

80. Sixthly, This circulation, joyning Iſſue with that leſſer one of Rain, and Snow, Impregnated with *Coeleſtial* influences, doth make the ground fruitful, and makes the *Superficies* thereof, bring forth all manner of Seed: Bearing plants and Trees, according to the kinds of the firſt Seeds, or Seminal Principles, implanted by God therein, at the firſt; and ſo being impregnated with the Salt of

the Earth; promotes vegetation upon the green carpet thereof: For when I view Plants, and Trees, in their Verdure in the Spring or Summer times, methinks, I see nothing but Water altered by Seeds, and Ferments, which thereupon (*Proteus* like) puts on various Garbs, and appears in different dresses: and to me it's as easy to apprehend, how Water moved by the foresaid causes, riseth up into Hills, and Mountains, there breaking forth into Springs, as to conceive, how Water riseth up into the tops of the highest Trees, and there to bud forth into leaves, Fruit, and Seed: or how between the Bark, and bole of the Tree, Water should ascend up, like as in *Syphons*, and that in some Trees, without any considerable alteration of taste, or consistence, from simple distill'd Water, save a sleight touch of a Medicinal *Odor*, as for instance, cut a Vine in *January* or *February*, but especially in *March*; and you shall find it weep forth a deal of insipid Water, at the knots or joynts where it's cut: so if you wound a Branch of the *Birch* Tree, or lop the bole thereof, in *March*; if it be done below, near the ground, the *Latex* thence issuing, is a mere insipid Water; but if a Branch, of about 3 Fingers thickness, be wounded to the *Semidiameter* thereof, and fill'd with Wooll, it Weeps forth a *Subacid Liquor* in great abundance, insomuch that in one day, such a wounded Branch, may give 8 or 10 pound of that Liquor: concerning the vertue whereof *Helmont* saith, *Qui in ipso lithiasis tormento solatur afflicto, tribus quatuorve cochlearibus assumptis, viz.* that it gives help, in the torments of the Stone, being taken to the quantity of three or four spoonfulls: which he saith, is *Balsamus Lithiasis merus*: which great quantity of Water, must come from the root,
and

and that must receive it by its Fibers, from the Capillary Veins of the earth, carryed thither by the grand Circulation of Water, with its included circle of Rain and Snow, which (the one meeting with the other) becomes the material subject of all Plants, Trees, and Fruits of the earth, which earth is onely the *Matrix*, where water becomes coagulated, by the Fracedinous *Odor* thereof, and by the Fermental operation of Seed, into all sorts of Vegetable *Concretes*, which spring up in the *Superficies* of the Earth. Now the Medicinal virtue that this Liquor hath, is from a Ferment which it receives from the Tree, as it passeth along the Channels thereof; for the same Liquor, weeping from a wound of the bole, near the Earth, hath not that virtue; Therefore it must be from a Medicinal Ferment it receives from the Tree above that place: also if a *Pompion* be cut (while it's growing) will (as a Friend of mine told me, upon his own triall) run a great deal of a limpid Water, which by the heat of the Sun, will be congeal'd into a pulpie substance: and that because the Water, which comes for the nourishment thereof, hath received a Specificall Ferment from the *Pompion*, which if it were intire, would presently be coagulated for the growth and increase thereof, but being let forth by a wound, is at last, by the heat of the Sun, coagulated into somewhat *Analogous* thereto: so probably *Melons*, *Cucumers*, *Hollands Squash*, &c. would, if wounded, do the like; for they have great store of Water, which comes for their supply, which by the Ferment of the Plants, is easily coagulated into the pulpous substance thereof: so the heads of wounded Poppies, weep forth a considerable quantity of Liquor, which condens'd by the Sun, becomes *Opium*, or the heads of the same bruised,

bruise'd, make *Meconium*. In both which, Water is the material subject, which passing up the secret *Meanders* of that Plant, is by the Ferment thereof (particularly appropriate to that Plant, and its kindred in the same family) determin'd into that coagulating juyce, of which *Opium* and *Meconium* is made; and so of the rest of Plants, Trees, and Fruits. Thus we see how Water (in the great Circulation, taking in the lesser of Rain, and Snow, which is repleted with a volatile *Nitrous* Salt, the one joining issue with the other) becomes the Material subject of all Vegetable Fruits of the Earth.

81. Seventhly, And lastly, The Circulation of Water, passing through varieties of Glebes, in the *Meanders* of the Earth, makes different Waters of various uses for the service of man: as for instance some Waters will bear Soap, and Yeast, viz. River-Water; and some River-Water better than others; also some Waters are better, and more peculiar for Bleaching, dying, Washing, Brewing, salving, boyling of Meat, &c. than others.

82. Now the great difference, as to the common use of Waters, is betwixt that of Springs, and that of Rivers; for the Rivers are generally supply'd from Springs, in the round of our Circulation, yet passing along the Surface of the Earth, and sometime running down Hills and steep places in torrents, and mixing with Rain-Water, as it runs along into Rivers, it both may and doth give a considerable difference to Waters in Rivers, from the same, as running immediately from Springs: and that because it walketh over several sorts, or soyls of Earth, as Marle, Limestone, Manur'd ground, and the like, where it licks up the *Nitrous* Salt, wherewith several Sorts of Earth, are repleted, and by the help of this

this, becomes *Saponary*, viz. bears Soap well, bears Yeast, bleacheth well &c.

83. Whereas simple Quick-Spring Water, passing through the Colander of the *Sabulum*, is frequently drain'd of all the Salts, it had imbib'd in other more *Patent* places of the Earth, and perhaps onely retains a small portion of a minute *Sabulum*, inconspicuous in Water, but remains visible after distillation thereof, or being little indiscernable Fragments of some Marcalites, or Stones, which it razeth off, as it runs along: which water (I say) being percolated from all Salts, through the strainer of the *Sabulum*, hath not that *Saponary* property, that River-Water hath; and therefore will neither wash, bleach, nor bear yeast. Besides, many Land-Springs, which drain through *Nitrous* Earth, empty themselves, by their proper Channells, into Rivers: Which also frequently, upon sudden falls of Rain, overflow low grounds, and so do wash from thence a *Nitrous*, or *Alkalizate* Salt, which contributes much to the making River-Water more useful, for the common intentions of Washing, Bleaching, Brewing, &c.

84. For, that which makes Soyls more fertile, makes Waters also more useful, which is an *Alkalizate* or *Nitrous* Salt; For what doth Limestone, Manure, Marle &c. add to the enriching of Soyls, but either by impregnating the ground with a *Nitrous* Salt, or making the Earth to become more Magnetical, to center upon it self the Volatile *Nitrous* Aereal Salt, which floats to and again, in the *Atmosphere*: whence it is, that the Country-man lets some part of his tillage or arable ground, ly fallow every year, on purpose that this *Nitrous* Salt which circulates in the Air, and is the main wheel of Vegetation, may coagulate it self upon the ground, made fit thereto, by

by the addition of Limestone, Marle, or Manure, and thereby become fitter to bring forth many fold : which if the ground be exhausted of this Salt, as in a few years, by bringing forth much Corn, it will, then it becomes barren, until it be manur'd by dung, ashes, limestone, or marle, and is laid *fough* or fallow (as the Country-man calls it,) which in the conclusion, impregnates the Soyl again, with a fresh Salt, or spirit, whereby it is made fruitful. You are the Salt of the Earth (saith our Saviour to his Disciples) which, if it hath lost it's savour, wherewith shall it be salted : So that the Earth hath a Salt which makes it fruitful, and the loss of that Salt makes it barren and useles.

85. As for Lime-stone, that contributes to the manuring, and enriching of ground, after a double manner; and that first by communicating its *Alkalizate* Salt (which it hath in it) to the ground, and next (which indeed I think is the cheif) that it becomes as a proper *Magnet*, to attract (if such there be) or center upon it self, the volatile fructifying *Nitrous* Salt, which floats in the Air : in which I am confirm'd, because the Country-man observes, that though it be quench'd already with Water, or Rain, before it be thrown upon the ground, (as most frequently it is) yet nevertheless, it makes the ground as fruitful, as if it were not; yea Lime, that hath laid long, and that one would think hath had all its Salt wash'd from it, if it be thrown upon impoverish'd ground, will yet make it fruitful. The same will the *Faces* of Soap-Ashes do, after all the Salts are wash'd, both from the Ashes of *Breccans* or *Brogg* (as they call it) and from the Lime: which is much us'd (where it's to be had) to lay up grounds to fertilize them. And that certainly for no other cause,

cause, but that it helps, as a proper *Magnet*, the *Nitrous* Salt to settle upon that soyl: whence it is, that they plow that ground often, thereby exposing new parts of the Earth to the Air, to become impregnate with the Salt thereof: so dung, and ashes have Salts in them, the one a volatile, the other a fixt, but are both much altered by a Ferment both from the Air, and Earth, before they become transmuted into the *Lessas terra*, or are turn'd into the true fructifying *Nitrous* Salt: Also Marle doth enrich Soyls two manner of wayes; the one is by having a *Nitrous* Salt inherent in it self, as I have found, by imbibing it in distill'd Water, Filtering, and Evaporating, where I have had actually a *Nitrous* Salt: The next way is, by being as a *Magnet* to the *Nitre* in the Air, to make it settle upon that Soyl, where Marle is most found; therefore that Soyl which is naturally a Marle, or is (at least) well manur'd therewith, keeps in heart as the Country-man saith) the longest, and will need little, or no other assistance, for many years, because its a proper sort of *earth* for the fructifying *salt* in the *air* to settle upon, which makes that *soyl* hold fruitful the longer. And from the different dispositions of ground, in order to the degrees of reception of this *salt* in the *air*, the great variety of *soyls* proceed.

86. And from the same cause, it's very probable that the fertility of *Egypt* is promoted, by the overflowing of *Nilus*, for Rain-Water doth contain of this Salt, which (as I said before) being carryed over the Country by Winds, are not let down, (save what moysture drills down by the *Syphons* of the Air) till the clouds come to the Mountains of *Ethiopia*, where being let forth in great abundance, they wash down along with them a *Nitrous* Salt from the Earth of the Mountains, which still adds to the

the fertility of the ground, and that the Air, at that time, hath plenty of this Nitre in it, is found, because if a turfe be digg'd up from the ground (as they usually do, to know the height of the flood) and weigh'd, they do find it to increase considerably, as the Water doth in height, with a moysture, which is impregnate with a Nitrous Salt: For the Earth of that Country is very *Magnetical*, and therefore is fertile, without showers falling immediately thereon and in lieu thereof, hath plenty of dewes (which commonly has the greatest quantity of the fructifying Salt in them) and the flowing of *Nilus*, which River is strongly impregnated with this Nitrous Salt, from which much Nitre is made, and brought into these Northern parts.

87. Yea, all the great difference of natural Soyls, (for some far exceed others in fruitfulness) seems to depend upom this very hing, *viz.* that some are naturally more replete with, or at least, are more magnetical of the Nitrous Salt, then others.

88. Thus we see, that it's a Nitrous Salt, that both fertilizeth Earth, as also maketh River-Water serviceable for the foresaid uses: for as it distinguisheth Earths, as to their fruitfulness, so likewise it makes the difference betwixt River and Spring-Water: and that it doth so, I am confirm'd by an experiment I tryed, for my better information therein *viz.* I took of a Well-Water in my own ground, which is supply'd by a true Quick-Spring (though it never runs over, because in our greatest droughts, it is never nere dry) I took (I say) a gallon or more of this Water (which alone never bears Soap,) in which I caus'd two dragmes of Nitre to be put, over night: which heated the next morning, I ordered the Maid to put some of the usual Soap thereto, and

to wash me some linnen therein, which she did, and made a very good Lather (as they call it) and was as fit for the purpose (and perhaps better) then if she had taken so much River-Water: The like (I suppose) Spring-Water would do, if it were suffered to run through a Tub fill'd with Earth: especially if that Earth hath not been too much exhausted of its Nitre, by previous Vegetation.

89. So that we see that Water in its great Circulation, with its included circle of Rain, doth (in its passage through, or over such Earths, pregnant with this Nitrous Salt) become so much salturate therewith, as to make River-Water useful for the foresaid purposes, towards which, as also to Vegetation, Rain-Water doth not a little contribute, by carrying along with it the influence of this *Aerial Salt*: for it will bear Soap, and Yeast, and I suppose, Bleach as well (if not better) then River-Water: not here to say, how much dew, especially May-dew, is replenish'd with this volatile Nitrous Salt, which contributes not a little to the Vegetation of the fruits of the Earth; nor to say what key to a Philosophick *Menstruum* is hereby hinted: concerning which, consult *Sendivogius* and the *Tractate de sale Philosophorum*, *Filtemanus* his *Appendix* and other *Hermetical Philosophers*.

90. Now to conclude, as Water in the grand Circulation, in the Bowels of the Earth, meets with different Salts, and Mineral Earths, it becomes the subject matter, wherein these work upon each other, and make Mineral, or hot Springs: and that from a nitrous, or volatile *Hermetick Salt*, floating as well in the Air of the Caverns, as above the Earth, which being condensed upon a proper Magnetick, or Virgin-Earth, which the Water, in its passage,
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runs thorough, dissolves the Salt, and after meeting with a Mineral Earth of *Sulphur* or *Sulphure vive*, makes an ebullition therewith, and not being carryed far, breaks forth in a hot Spring, witness the experiment of *Monsieur de Rochas* in his Tractate, *De Aquis Sulphureis*, which I find plac'd at the latter end of the Sixth Volum of the *Theatrum Chymicum* who tells us, that finding a hot Spring, near that Mountain, whence the River *Padus* in the *Alps* takes its Original, and desirous to search out the cause thereof; digg'd along its Chanel, with Laborers for 15 days together, who found as they came nearer to the source, the hotter was the current, and that too, though the Mountain was covered with Snow. [But first he evaporated 40 Ounces of the Hot Spring-Water, and 5 was left of a slimy matter, which being further examin'd; gave three Ounces of a Sweet, and fusil Salt; the rest was a slimy fat matter, which by Fire, shewes it self to be of a Sulphureous Nature] after digging as aforesaid, he found the Original of the hot Spring, by observing a very great ebullition with much froth: who, to search yet further, digg'd on for three hours along the Chanel of the same Spring; and found the Water beyond it to be very cold, which was the Current of the same Spring, and had lost both it's tast, and heat.

wherefore he took a part of that hot Earth, which seem'd to give heat to that Spring, and also some of the Water, in the very source, tryed them both, found the Earth to be a pure simple *Minera* of *Sulphur*; and found the water to be impregnated with a Salt, which he calls (for want of an other name) *Sal Hermeticum*, by which, it was manifest that the spirit or salt contained in that water, by penetrating the substance of that sulphureous earth, was the cause of
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the great Ebullition: which is the same as in pouring Water upon *calx vive*, or in making *Tartarum vitriolatum*. But, to be further satisfied, he ordered the Labourers to dig 12 days longer; and found the current to be clear, and sweet, like ordinary Fountain-Water: but the Earth to be Salt in taste, with which the current of water was impregnated; and therefore he examin'd the Earth, by infusing it in Rain-Water, decanting off the clear as it was settled: the one half whereof he boyled up in a Copper Vessel, the other part he distill'd in a Glass-*Alem-bick*, to try whether way would yield the more Salt: and found much less, both as to quantity, and quality, in that done in the Copper-Vessel, than in that distill'd in the Glass-body. Then he infus'd this Earth again in the same Rain-Water, and found a Salt of the same nature as before, but less in quantity: which extraction he repeated a third time, but found no Salt at the last. The earth therefore he expos'd to the Air, and found after a time, it was impregnated with the same Salt; which Salt being separated, and the Earth become insipid, upon being expos'd to the Air again, was freshly impregnated with the same Salt; which he did also a third time &c. with the like effect: by which he gathered, that, that which renew'd the *Terra mortua* (as he calls it) was the *Spiritus Universalis* or *Anima Mundi*, or, as I said, the volatile nitrous Salt, which is to be found both in the Earth, and the *Atmosphere*. Which experiment, though it should have been inserted in our discourse of hot Springs: yet is not very impertinent in this place; because after all this digging they found no bottom, or beginning of the Spring it self: and was the same current whether cold, or hot; whether saturate with

that *Hermetick Salt*, or insipid; and therefore might probably, by its Channel, come from the Seas, in the great Circulation, set on work by causes afore-said.

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A TERNARY OF

Medicines,

FOR

Curing most DISEASES.



AVING, in the foregoing discourses of my *Hydrologia Chymica*, had occasion to treat of the Essential, and efficient causes of many Diseases, as the *Palsy*, *Apoplexy*, *Asthma* or *Shortness of Breath*, *Scurvy*, *Dropsy*, *Hypochondriack Melancholy*,

Fevers, &c. and there, onely in a cursory manner, hinted the most effectual Spagyricall remedies, as the Treatise it self will shew, I shall, here, in order to the practical part, comprize most of them in three *Catholick Medicines*, whose use are of large extent; and may (with a little Latitude) be called, *Universal Remedies*, answering the three grand Indications or Requirings of Physick. Those be 1. *Cathartick*, or solutive: 2. *Cordial* or expelling of Wind: 3. *Diaphoretick* or Sweating. The first I call *Scorbentick Pills*, or Pills proper against the *Scurvy* 2. The

second is call'd *Elixir Proprietatis* or *Cordial Elixir*
 3. The third I call *Diaphoretick* or *Sweating Pills*.

These three Preparations are compos'd of the best, and most useful Vegetables. The *Menstruums*, and Salts, wherewith they are extracted, are graduated to the highest pitch they are well capable of, viz. by Digestions, Circulations, and Distillations, being exquisitely depurated from all *Phlegms*, and *Heterogene Faces*: The very Salts, and *Menstruums*, given alone, are Medicines of no inferior order, being abstersive, and aperient of the Vessels: but further, They also open the bodies of Noble Vegetals; and being impregnate with their additional virtues, become very considerable helps to nature, to proscribe what is noxious, and combersome to the digestions (which is the cause of flatulencies, or Winds) and to fortify, and strengthen the vital Elements, in their functions for the health of the body.

The operation of these three Medicines are innocent, safe and harmless, as I have found them, by frequent, and constant experience; and not onely so, but also I have found them very succesful, in order to the cure of diseases: with which three, rightly prepared, I had rather chuse to manage a practice, than with so many score of the vulgarly prepar'd Shop-Medicines, whose larg portions, and Farraginous mixtures, rather oppress, and nauseate the digestions, than give any laudable help, in the proscribing that which is noxious, or strengthening to the vital powers.

And first, as to the *Scorbutick*, or *Cashartick Pills* which are proper against the *Scurvy*: That being a disease which though at its full state, it vitiates the
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ultimate digestion, and whole habit of the body, with its various Symptoms, yet (as you may see further, in our discourse of Diseases) the first Seminaries thereof are laid in the Stomach (*viz.*) in the error of its Ferment, which by some recremental *Faces* being clogg'd, and hindred from making a thorough digestion of the alimentary Juyce, laies a foundation for the vitiating the subsequent digestions. For as the Ferment becomes clogg'd, and thereby weak, the more *Sordes* are every day heap'd up in the Tunicles of the Stomach, which doth still add to the debilitating the Specificall Ferment thereof; towards which, conduceth the plentiful drinking of Ale: and that often not thoroughly fermented, or wrought but thick, and muddy, which leaves abundance of dreggs upon the Stomach; dunting and dulling the Ferment thereof. Also the great use, of late, of Sugar, both in Sweet-meats, Drinks, and Sauces, doth a little clog the Ferment, and add to this disease; so the eating of Salt-meat, and Rye-bread, by reason of an *Alienated* Sourish Ferment therein, which not being *Similar* to the Acid Ferment of the Stomach, begets flatulencies, and leaves much *Sordes*, especially to weak Stomachs: to which disease, also the plentiful feeding upon varieties of Dishes, and the too often eating, and drinking, between meals, before one part be digested, and carried off; another part is freshly thrown down: which sometimes, makes that part of the nutritive Juyce, which should have passed forth, stay longer than of right it should, and thereby become too much Fermented, which over-acidness thereof passeth uncorrected into the second or third digestion, and so vitiates the blood therewith: which also, in the Fabrick of the Animal Spirits, vitiates that prolifike offspring:

whence proceed *Scorbutick* Palsies, and Apoplexies &c.

And we frequently find, that those who indulge their appetites too much (as many do, who make it most of their business to eat, and drink at all times of the day) as also those who foster, and debauch their Stomachs with strong cawdles, are the most apt to have this disease of the Scurvy, and it various Symptoms, creep upon them; and after all this indulging of their appetites, with plentiful variety of food, many add to that, idleness, or want of exercise: the want of which, in the midst of plentiful feeding is the speedy way to bring this disease, and that accompanied with *Asthma's* or shortness of breath, with which we see many (who are addicted to sedentary lives, and yet feed high) are very much troubled, which I may properly call, a *Scorbutick Asthma*. Upon this account of the depravation of the Ferment of the Stomach, whose error is continued down to the following digestions, thereby leavening it self with the whole mass of humours of the body, this disease of the Scurvy (with an inseparable *Flatulus*, or wind of the Stomach, and blood) disguiseth it self under the mask of most diseases, and appears complicated therewith: so that, there are few diseases, whose *Seminals* are not *Identical*, with that of the Scurvy. Therefore, that which is proper for the curing or preventing the Scurvy is also proper for the curing, or preventing other diseases, that depend thereon, whose *Bases* are much what the same, viz. the depravation of the *Stomachical* Ferment.

In order therefore to the assistance against the prevalence of so *Epidemical* a disease as the Scurvy, which creeps insensibly from the foresaid causes, upon most men, and women, I compose these *Scorbutick* Pills,

Pills, whose operation is to purge gently, thereby to carry off from the Stomach, and other *Officines* of the digestions, the *Stagnant Recremental Sordes*, which are apt to settle, as residences of the Food we take in; and that, many times, for want of a penetrating volatizing Ferment, which should, after digestion, leave no *Feces* or *Caput Mort* behind: for with such volatizing Ferments, strong constitutions are endued; the constitution being most what to be computed from the natural vigour, or weakness of the Ferments (which are the Authors of all Transmutations of Food from one taste and consistence to an other, in the whole circuit of the body.)

These Pills (I say) taken at due seasons, help nature to carry off that, which is every day precipitated to the bottom and sides of the Stomach, which is a kind of *Tartar* or slimy sediment of our meat and drink, not volatiz'd by the Ferment, which daily increasing, doth still more, and more, dull, and dead the foresaid Ferment: But if by such help, as these Pills, or other direct courses, the digestions be reminded of their due separations, then these posterous precipitations, may probably be prevented, and the diseases, thence springing, (whether solitary Scurvy, or others complicated therewith) be anticipated: for these *Scorbuick* Pills are so prepared with noble vegetal Extractions, by a depurated *Menstruum* and generous Salt, as that they not only are gently solutive and absterfive of the *Inherent Sordes*, but also are (withal) restaurative (by their Balsamick Ingredients) of the lapsing Ferments; and that first by taking off the weights that oppress, and load, and next by inciting them to a vigorous activity; especially if seconded by

perance, in meat, drink, and excercise; together with a Dose (sometimes) of our *Cordial Elixir*; which, taken after a previous abstersion, by the *Scorbutick Pills*, proves the more effectual in rectifying the Ferment of the Stomach, and in discharging of Wind, which proceeds from the reluctancy of the Ferment to the *recremental Sordes*, and therein proves a great Cordial, if rightly prepared. For indeed, to speak properly, nothing can truly be call'd Cordial, which doth not allay this *Flatus*, or wind, by taking away the cause thereof (at least mitigating).

These Pills also are proper for Dropsical bodies, by making gentle evacuations: for such remedies as are absterlive, and diuretick, and withal have a restaurative astringency, communicable to the debilitated *Membranous Parts*, reducing them to their proper tone, are the most proper in Dropsical maladies: Of which sort are these Pills; for they are not onely absterlive, but also by their included essential Salt of *Tartar*, are not a little *Diuretical*, and by its restaurative Ingredients, gives a gentle astringency to the *Membranous Parts*, promoting the proper tone thereof in their due *Systole* and *Diastole*. To which also should be added the use of our *Elixir Proprietatis*, to strengthen the bowels, and Ferments thereof; not that I say, these will cure a confirmed Dropsy, where the very *Omentum*, or *kel*, and *Peritoneum*, are become putrid, and rotten, through the long *Stagnation* of the extravasated liquor: in which case I question whether the noblest Chymical *Arcana*, viz. the *Mercurius Diaphoreticus Fixus*, or *Precipitulum Paracelsi*, would effect the Cure.

In Hectick Fevers, and incipient consumptions, these *Scorbutick Pills* are also effectual (being taken in a somewhat less quantity than in the other Cases)

Cases) for besides their moderate absterſion (by Vegetable Salts) of excremental *Sordes* (which otherwise oppreſs the digeſtions) they hinder the reſolution of the compage of the blood, which frequently, in thoſe caſes, is apt to ſhew it ſelf by faint ſweatings, arguing thereby a Solution of the *Vinculum* of the blood: But by ſome Baſamick, and gently aſtringent Ingredients therein, the *Retrograd Analyſis* of the maſs of blood is prevented: in which caſe theſe Pills are well ſeconded, by ſome Doſes of the *Elixir Proprietatis*, taken every other Morning, faſting, two hours after, and the Pills alſo to be taken every other Morning, two or three at a time, according to direCTIONS given afterwards.

Theſe Pills are alſo proper againſt *Hypochondriack Melancholy*, by keeping the body ſoluble, removing ſome *Sordes*, whoſe reluctance (as I ſaid) with the Ferments either of the Stomach, or Splene, begets that *Hypochondriack* Wind, which frisks to and again, and floats round all, or moſt parts of the body: and ſuch perſons, commonly feel themſelves moſt at eaſe, and free from the cumber of the wandering *Flatus*, when their bodies are moſt ſoluble. To a further aſſiſtance wherein, the frequent taking of *Elixir Proprietatis* contributes not a little, by helping to compoſe the otherwiſe irregular *Flatus*.

Yea, in all diſeaſes that are *Symptomatical*, or ſecondary to the Scurvy, theſe Pills are helpful, as in *Scorbutical Palfies*, *Apoplexies*, *Aſthma's* &c. which depend upon the prevalence of the *Scorbutick* Ferment, and *Flatus* thence iſſuing. The like ſucceſs they have alſo upon *Colicks*, *Diarrhea's* or Loofneſſes, and *Dyſenteries* or bloody Fluxes; eſpecially if ſeconded with ſome Doſes of the *Elixir Proprietatis*, and ſweating Pills.

Fur-

Further as to Fevers, whether intermitting, or continued (so they be not malignant,) viz. whether *Quotidians*, *Tertians*, *Quartanes*, or *Acute* continued Fevers, these Pills are very helpful; first by absterfing the recremental *Sordes*, which adhere to the vessels, and while they are there, they promote the feverish fermentation of the blood, and humours: for that the *Crisis* of the blood, and humours, have an immediate dependance, upon the *Regimen* of the Stomach, and *Regent* Spirit thereof, is apparent in the *Febris Ephemeris*, or sudden *Febricula*, which happens from a disorder of the Ferment of the Stomach, not being able to subjugate the in-taken food, which causeth a perfect Fever, in all its Symptoms, till the digestion be either compleat, or the deprav'd mass be thrown up out of the Stomach by vomit; which done, that sort of Fever ceaseth: so that the *Minera* of a Fever, whether intermittent, or continued, yea even of all, or most diseases, is radically in the Stomach, after whose pipe (as I may say) all the rest of the Ferments of other parts, dance, and are really subject to the beck, and influence thereof. And that Fevers do much depend upon the *Regimen* of the Stomach, is evident from the frequent vomitings, pains in the head, and back, thence proceeding; as also from the strong pressing thirst therein: and is more manifest, because, if while the blood boyls strongly, by a Feverish Fermentation, a good medicine be given, while it is yet in the Stomach, the blood ceaseth from its spurious Fermentation, and perhaps onely breaths forth in a gentle moysture, the Pains cease, the thirst is quench'd, and all is at ease and quiet for a while. So that in truth, Fevers are but secondary in the blood, and humours, but primarily in the Stomach;

to which also, all Medicines primarily are to be level'd. I say therefore, as these Pills work upon some of the deprav'd matter (which lyeth heavily, as long as it is unvolatiz'd by the Ferment) of the Stomach, by their solutive property, and irritating the *Systole*, or compression thereof, (vulgarly call'd the *Expulsive Faculty*) together with the orderly *Systole* and *Diastrale* of the *Pylorus*, carries of part of that recrement, which otherwise yeilds fuel to the feverish fire, and promotes the *Febrile* Fermentation in the whole mass of *Liquids* in the body: so that these, by their gently purging quality, lessen the *Alkalizate Sordes* which cause thirst, and feverish burnings, and boylings in the blood; and besides by their *Menstrual* Salts, blunt the acrimony of the spurious fermentation of the Stomach, and with the help of *Elixir Proprietatis* (which I call the *Cordial Elixir*) taken as I shall shew afterwards, the cause of the feverish *Flatus*, will be much abated, which *Flatus* is the necessary concomitant, and result of the spurious feverish fermentation in the Stomach, from which incoercible *Flatus*, or *Spiritus Sylvestris*, all those usual sick and faint fits, proceed.

And if, upon a previous vomit, which, skilfully ordered, lessens these *Alkalizate* burnt *Sordes*, which sometimes lie fast riveted in the tunics and fouldings of the Stomach, these Pills be afterwards given, two or three dayes together, and a Dose of the *Cordial Elixir*, be given in the afternoon; about 3 or 4 by the Clock; as also last at Night; one of our *Diaphoretick* Pills, with a glass of burnt Wine after it, will so blunt the acrimony of those burnt recrementall *Sordes* (the *Minera* of the Fever) as that the feverish Fermentation will be abated, the cause of the *Flatus* (whence sick fits) will be mitigated,

tigated; the boyling Spirits will be settled: The *Archens*, or regent spirit of the digestions (that *Spiritus impetum faciens*) will be composed, and all the clatter will be hush'd into a silent calmness, with a gentle breathing sweat: which *Diaphoretick*, or sweating Pills are but to be taken every other, or every third night; and that too after a previous evacuation either by our *Scorbutick* Pills, or at least by a *Clyster* ordered that afternoon, before they be taken.

Thus the causes being removed, the Fever will begin to decline (*nisi mors sit in olla*) unless death be at hand; not but that the disease will rally up again, but with less force: then you must still repeat the Method of your solutive pills in the morning, and *Cordial Elixir* in the afternoon, and sweating Pill at night, which last (when repeated) let alwayes be done that night, after the solutive Pills has been before taken in the morning. Thus you will, by the Blessing of God, find a considerable abatement of the violent Symptoms of a Fever, in a very small time.

And as in continued, so also in intermitting Fevers, whether *Quotidians*, *Tertians*, or *Quartans*, the same Ternary of Medicines, are of great use and benefit: and that thus (*viz*) by taking (the day before the fit) 2 or 3 of the *Scorbutick* or *Cathartick* Pills, and the night after, a Dose of the *Cordial Elixir* at bed-time, and then (that day the fit comes) to take one or two of the *Diaphoretick*, or sweating Pills, two or three hours before the usually expected time, drinking a draught of hot drink after, as of Mace-ale, Posslet-drink, or Burnt-Wine, and to endeavour, with one covering more than ordinary, to fall into a gentle breathing Sweat, which these will

will readily procure: And during the time of the Patients sweating, he or she is to take nothing but hot drink as aforesaid, and to lye in bed (if the fit come on the day time) till the next morning; and then to renew the taking of the *Cathartick Pills*, and *Elixir*, as also an other of the sweating Pills, before the next expected fit, according to former directions: and by this means, the Patient will find ready help, sooner in a *Quotidian* or *Tertian*, than in a *Quartaine*, that being seated more deeply, in the radical Ferment of the Stomach, and Splene. These as well as continued Fevers (if not all diseases) are radically begotten in the Stomach: primarily there, and secondarily, or Symptomatically in other remote parts, to whose *Regimen* this *Ternary* of Medicines is chiefly made to correspond.

For the general *Indication* of most diseases, are reducible to three; and those are, first, a *Recremental Faces* or deprav'd humour, from the error of the Ferments, both of the Stomach, and other digestions: I say, the absterision of these degenerate *Faces* in the several digestions, is the first, and cheif *Indication* in most diseases: The second is a *Flatus*, or Wind ingendred between the reluctancy of the Ferment, and the foresaid *Sordes*, which constantly begets (according to the degrees thereof) a fresh supply of an inbred *Flatus*, or Wind, the Author of many Pains, disturbances, in the vital œconomy, and thence Sickneses. I say, the quieting, or allaying the Wind, by curing, or preventing the the true cause thereof, is the second main *Indication* requisite, in the Cure of most diseases.

The third and last is an acrimonious acidity, with a spurious *Lætex*, in the intermediate Juyces, and Liquor of the Blood, and *Genus Nervosum*, whose
Semi-

Seminals are defum'd, from an error of the Ferment of the Stomachical digestion. The correcting which acrimony, and reduction of the blood to its genuine, Sweet, Balsamick *Eucrasia*, is the third Indication requisite to be performed, in the Cure of many diseases.

The general ignorance of this *Ternary* of Indications among some Physicians, doting (in lieu thereof) on the quaternary of fictitious humours and the like number of external barren qualities, by which they groap'd (as in the dark) after the heat and cold, driness, and moysture of diseases, and ordering their medicines accordingly, hath been no small *Remora*, in the improvement of this noble science of Physick: which (through the *Tacite* Subscriptions, to the *Galenical* prescripts, by most Physicians) hath thereby long been kept in obscurity; but now at length (by the sons of art) become more manifest, and are expos'd to open view.

To which triplicity of Indications, this *Ternary* of Medicines are chiefly, and primarily adapted: For first, the *Scorbutick* or *Cathartick* Pills are ordered for the carrying off those *Recremental* Faces, which are begotten through the depravation of the Ferment of the Stomach, and other digestions, which give Beginning, and layes the foundation of most diseases: Secondly, the *Cordial Elixir* appeaseth, and quieteth the *Flatus*, or wind, begotten from the reluctancy of the Ferment, and corrupt matter oppressing it; and therefore it is proper for those diseases, where Wind is most predominant, viz. in those diseases where the Ferments are most weakened; for where the Stomach in its Ferment is most debilitated, there Wind is most prevalent: And thirdly; the *Diaaphoretick*, or sweating Pills, dint, and correct the acri-

acrimonious acidity of the secondary digestions, and liquor of the blood, and of the *Genus Nervosum*, and carry it off, with the spurious *Latex*, in gentle breathing sweats; and therefore it is proper in all diseases which depend thereon, as in Fevers, Colicks, Defluxions of rheume, dysenteries or bloody Fluxes, and pains of all sorts, in all places of the body.

Now as to the *Cordial Elixir*, whose preparation is with a *Menstruum* impregnated with vegetable essential Salts, and is either red or white according to *Helmont's* process: (and not with Mineral acidities (according to *Crollius*) who falsely reports *Paracelsus* his *Elixir Proprietatis* to be made, with the addition of Oyl of Sulphur) besides its uses aforesaid, as an auxiliary to the *Scorbutick Pills* in the cure of many diseases: it is also exquisitely proper for most diseases in women; and that whether the disease be from the Splene, *Matrix* or mother, or *Genus Nervosum*: yea, if I should comprize all these in one, and say from the Stomach, and its *Regimen* upon all the parts at the remotest distance, I should not (I think) much say amiss: For otherwise, why doth a proper remedy while yet in the Stomach, give help to other parts, as for example to the Splene, *Matrix*, *Genus Nervosum* &c. not, but that the *Matrix* hath a proper *Regimen* of its own, which being discomposed, puts the Stomach, and other parts (by the Links of the *Animal Chain*) out of order.

The *Elixir* (I say) gives help to most diseases incident to women, whether with Child, or not; for it appeaseth Wind very much, which accompanieth most diseases women are troubled with: It is a very good remedy against fits of the mother, which is an incoercible *Flatus*, or Wind, arising from a reluctance

luctancy between the recremental *Faces* of the *Matrrix*, and *Archeus*, (or *Spiritus impetum faciens*) thereof, especially if taken after a gentle evacuation made by our *Scorbutick Pills*, which may be done very safely to women bræding or with Child, as I have further treated, in my *Hydrologia Chymica*. To both, (*viz*) to women breeding, and to others with Child, I have given the like, yea stronger purges, and that did its work not onely innocently; but also with good success, both to the woman, and Child; and that too, not without very good reason: For whence is it, that women frequently (during the whole time of their breeding, and being with Child) are so tormented with Pains, Vomitings, Gripings, Faintness, Sicknes, and the like; but chiefly from a great foulness of the Stomach, and plenty of recremental *Sordes* heap'd in the Womb (and that from causes not pertinent here to speak of) which often procure feverish Fermentations, in the Blood, gripings, weakness of the Back, illness, faintness of the Stomack: and by any sudden passion of the mind, rouseth up the Splene, and Mother, to the great discomposure of the whole fabrick of the body.

Now what is more pitiful, than to see miserable women, groaning under the weight of these real diseases, while they are with Child; and under that colour of being so, they fancy to themselves, they are to take nothing of Physick for their assistance, least they harm the Child: and so willingly languish under distempers that might easily be helped, and they themselves live more cheerfully, and bring forth the Child more livelily; For if they take sometimes 1 or 2 of these gently purging pills, over night, or in the morning (onely taking some broth at noon, and

and eat a little warm meat, without any further trouble) to keep their body open; carrying off thereby, the dross which oppresseth the Stomach, causing wind, sickness, and faintness, and withall if they take often of the *Cordial Elixir*, according to following directions, they would (I say) find themselves more healthful, and cheerful, and might thereby be inabled (through the blessing of God) to bring forth with more strength; and that, not onely for their own good, but also thus doing (together with an orderly diet) it helps to make the constitution of the Child, to be more sound, and healthful. For if the blood and humours, wherewith the *Embryo* is nourished, be tainted with impurities and distempers, may easily thereby lay the foundation of a weak constitution; and make the Child prove sickly, and diseased, and all for want of help, in curing the Mothers infirmities.

That these pills, and *Cordial Elixir*, are safe and harmless, in this case; yea and stronger Medicines than they (not to say vomits themselves, which I have sometimes ordered to women in that condition, and that with good success) is evident; First from the mildness of the vegetable Ingredients (having not a grain of a Mineral in it) and next from the experimental good effects thereof: so that if women at length would admit of taking some thing for their own, and Childs good, they might live more comfortably, and cheerfully, during that time, than otherwise they do.

Also these Pills, and *Cordial Elixir* are proper for the infirmities of young women, as the *Green-Sickness*, *Asthmatical Cachexies* and other diseases depending upon the *Aliquid amplius*, (*viz.*) upon the obstructions of the *Menses*: For those obstru-

Etions are (originally) from a rejected *Sordes* of the blood, which furs up the Orifices of the vessels of the *Matrix*, whereby the blood, being prevented of its natural critical evacuation, flows back, and causeth a *Plethory*, and sometimes Fevers, and *Stagnation* of the Blood in the Lungs, and other parts: whence short-windedness, stuffing, and stopping of the Stomach, want of appetite, indisposition to action, with other Symptoms, pains, swellings, and the like, which are the sequels of this obstruction of the uterine vessels. Towards the correcting of which Enormities, these *Scorbutick* Pills, and *Cordial Elixir* avail much; For the essential Salts, wherewith these preparations are impregnated, are aperient of the vessels: and with the other Ingredients, are absterive with all; thereby answering the chief Indications of these diseases.

And as to the *Diaphoretick* or sweating Pills, their use is of pretty large extent, as an auxiliary to the other two: and that chiefly, in all Fevers, whether continued, or intermittent, in all colds, and coughs, (which require (to the cure thereof) sweatings, and breathings, of the blood) also in all Colicks Loosenesses, Vomittings, bloody Fluxes, Defluxions of Rheumie, Head-aches, and generally of most pains, to which they certainly give ease, especially if they are taken after an opening of the body by the *Scorbutick* Pills; for so taken, they frequently give ease in the greatest torments, and gripings, as also stay violent vomittings, and purgings, by composing the intragements of the *Archeus*, or regent spirit of the Stomach; and putting the *Pylorus* in good order, makes it observe the due seasons of its opening, and shutting.

Now as to the directions for the manner of use
of

of these three Medicines take as followeth: and first, as to the *Scorbatick* or *Cathartick* Pills, the *Dose* is from one, to four, or five, but two or three is the common ordinary *Dose*, swallowing them down, in a spoonful or two of Posset-drink, or any other liquor, alwaies beginning with a less number, as one, or two; and as they work, so accordingly to keep to that number, or to take more, to four or five, according as the body is more difficult to work on, or the disease more radicated. If you take but one, that may be done over night, last to bed-ward, which will give one stool, or perhaps two, the morning following: if you do so, you may go about your occasions the day following: But if you take two or three, then you are to take them betime in the morning, in bed, or up: if you take them in bed, you may lye two, or three hours after: and when you get up, take one draught of hot Posset-drink, which let commonly be three hours after the taking of them, and sometimes to take nothing after them till noon, and then take a porringer of broth, and eat a little warm meat, airing the drink at dinner, and for that day, (if it be cold) not to stir abroad. They may be taken two daies together, and rest the third; or may be taken every other day, or every third, fourth, or fifth day, or once a week, as the necessity of the disease requires, and opportunity gives leave. For diseases of long continuance, will require frequent takings thereof: while you take them, eat but sparingly, but especially at Suppers. You may with safety take often of them, for they do not work, by any fretting corrosion of the Liquids and Solids of the body, but by gentle reminding the digestions, of their due separations; and by their Balsamick Ingredients, make the patient more cheerful,

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ful and lively, by adding vigour to the ferment of the stomach : and that in all the Diseases aforesaid. They may be taken at any Season of the Year.

Secondly. As to the Cordial *Elixir*, the dose is from a thimblefull to a spoonful ; and that either taken alone, to those who can so take it, putting a piece of Sugar or Sugar-Candy into their mouths, which dissolving, takes away the bitterness, and heat of the mouth and *Larynx*, which the *Elixir* taken alone, leaves behind it ; or else those who cannot take it so, are to take it in a glass of Sack or White-Wine : but the other way of taking it alone is the better, for though it be more bitter and hot, while it is going down, yet as soon as it comes into the stomach, it becomes grateful, and thereupon acceptable thereto, doing its work more really, by becoming a more effectual Cordial, for discussing Wind and Diseases thereon depending. The Patient is to Fast two or three hours after the taking thereof, and to take it those mornings they take not the *Scorbutick* Pills ; and sometimes (as afore directed) to take thereof, about three or four by the Clock in the afternoon, of that day the Pills are taken, or at going to bed, according to former direction ; and that in all the Diseases afore named.

And Lastly, As to the *Diaphoretick* or Sweating Pills, The *Dose* thereof, is one, two, or three Pills, but two is the ordinary *Dose*, which are to be swallowed down in a spoonful of Burnt-Wine, Mace-Ale or Posset-drink, taking a draught of the same hot-drink after them : But those who cannot swallow them as Pills, may dissolve them in any of the foresaid Liquors, and wash it down with a little of the same clear drink. These are to be taken last at night, at bed-time, which, without laying many more cloths

cloths than ordinary, will bring the Patient into a pleasant, gentle, breathing Sweat, more than any other Medicine I ever yet met with, and will allay the greatest thirst, and bring the Patient into a desired calmness and quietness of Spirits; abating the most rigorous *Synptoms* of most Diseases, whether *Acute* or *Chronical*. The next morning after the taking the Sweating Pills, the Patient is to take, either a *Dose* of the Cordial *Elixir*, with a glass of Burnt-Wine, or a draught of other hot drink after it; or only so much clear Burnt-Wine, Mace-Ale or Posset-drink, while he is in bed, and to lie two or three hours after; which will bring the Patient again into an easie breathing Sweat; which (if he please) he may help forward, with the addition of one Covering more than ordinary. But these are generally to be taken after a gentle evacuation by the *Scorbutick* Pills, in *Chronick* Diseases; or by them, or Clysters in Fevers.

Lastly. To number the varieties of Cures, that have, by the Blessing of God, been performed by the help of this *Ternary* of Medicines, would but prove tedious, and therefore I shall purposely wave it.



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THE
Epilogue :

OR,
The ESSENCE
OF
SCARBOROUGH-SPA-W.



That I might inform my self more satisfactorily of the true Constituent Parts of the water of the *Scarborough-Spa*, without any other additions, I took three Gallons and three Pints thereof, which I let stand a while to settle; whose first Precipitation was a reddish Sediment, from which I filtred the water, and this, dryed in the Sun, proved to be a red Earth or a kind of *Ocre*, or rather *Terra Vitrioli*, being that which falls to the bottom of the Channels of all, or most Mineral Springs, whether Sowes or others, and tingeth the Earth it runs along, red. Then I placed the water in great glasses, upon a sand-Furnace, with a gentle heat, and in a days time a thin crust or film swom upon the top thereof, which I took off with a silver spoon, and dryed it in the

Sun, and it was a white scaly light *Floccule*; after a while longer, some more of the same separated it self by heat in the water, some of which swom, and other parts precipitated to the bottom; therefore I filtred all the water therefrom, which dryed in the Sun (as the former) was muchwhat the same: Then I evaporated the clear filtred water (in glasses) to a dryness, which I found to have an *Alumino-nitrous* taste, or rather indeed more nitrous, and would relent in the Air. This I took, and dissolv'd it in simple distill'd Rain-water, and filtred it; which left an other insipid, gritty powder, with a sparkling lustre. The clear filtred water (which with Oyl of Tartar poured thereto, I found, gave a milky separation, as if taken fresh from the Spring, but with Gauls it gave no purple Tincture, after the precipitation of the red earth, but became pale-coloured thereby) This filtred water (I say) being again evaporated to a dryness, was dissolv'd, filtred, and evaporated again, and so a third time, separating still, what would be separated, by frequent filtration.

Of the foresaid quantity of *Spaw*-water, I took about two quarts; which having filtred, I put it in a skillet, and boiled away two thirds; then I let it cool, and a sediment of an insipid *Calx* fell to the bottom, from which I filtred the water, dryed up the *Calx*, and then boyled up the water to the dryness of a Salt, which was pretty white. This I dissolv'd in simple distill'd Rain-water, and then filtred, and the *Calx* being dryed in the Sun, was a bright sparkling powder: The filtred water I evaporated in glasses with a gentle heat, to almost a dryness, then I filtred it again, and so on.

Thus I can separate from the limpid *Spaw*, as it's taken out of the Fountain, eleven or twelve distinguishable

guishable Earths or *Sabulums*, somewhat different in colour, shape, and consistence one from another; which the *Alumino-nitrous* Salt in the water razeth off from several Rocks or Quarries of Stone, which it passeth through, as I can shew at any time, to those whose curiosity prompts them to see Rarities of this nature; I being the first (I think) that hath made so many several Separations therefrom. All these Earths or *Sabulums* were equally dried in the Sun, or a gentle heat *Analogous* thereto; and therefore could not have different colours from different degrees of heat; none of them underwent any *Calcination* or stress of fire, nor received any alterations from any additional (being simply done, without mixture, save of distill'd Rain-water) all these *sabulous* separations were insipid; for the Salt, where the taste was, became concentrated in a small room.

Now if the water be drunke, while these stony concretions are in it, as it is in all that is drunke at the Spring, or elsewhere; if any harm (I say) happen to any Patients that drink of it, for want of other good Medicines to carry away the feculent dregs thereof, it is chiefly from these *sabulous* concretions, which precipitate upon the bowels, sides, and *Orifices* of the Vessels, which preventing, or obstructing the wonted fluidness of the blood and intermediate juyces, occasionally in some bodies (apt thereto) may cause Fevers, Dropsies, Defluxions of Rheume, and the like; It may also increase the *Sabulous Duelech*, and thereby become improper for those afflicted with the Stone. For the Spirit of Urine (that *Calculorum Architectus*) meeting with these Earths or *Sabulous* Concretions, becomes coagulated thereon (in bodies prone thereto) and by its *petrescing Coagulation* gives beginning (at least) increase

creaseth the *Dueteck*. The same *Sabulums* may also contribute to the Torments, or Gripings of the Guts, by clinging to the Tunicles thereof; and further may vitiate the *Systole* of the Membranous parts of the vessels, and thereby may suffer the (otherwise current) *Latex* to stagnate in the vessels; and thence produce swellings in the belly, legs, or elsewhere, as some, after returning from the *Spaws*, find themselves troubled with.

For we are to consider, That the several Digestions first have a concomitant heat, by which the water may be inclin'd to a *sabulous Precipitation* upon the bowels themselves, unless it be carried off by some other good *Absterfives* (which ought of right to be given upon the drinking of the Waters) and next to that we are also to consider, the *Anastomosis* of the vessels, each into other, in the whole circuit of the body, to be as so many Colanders, Streiners or Filters, by which the recremental *Sabulum* may (suppose) as to the courser part, be left upon some of the bowels; and the finer part, by closer Colanders, may be left upon other more remote vessels, and in both cause obstructions, sufficient sometimes to procure trouble enough.

Not unlike to these stony Concretions, is the *Tartareous* Sediments of our meat and drink; and though *Helmont* laughs at *Paracelsus* for his bringing in a *Classis* of *Tartareous* Diseases: yet after that, rectifying the Notion, tells us, That there may be a *Tartarum resolutum in primâ vel materiâ ultimâ existens*. I say, the better Kitching-Preparations and Fermentations our meat and drink undergo, and the stronger the fermental Digestions are, the less of a Tartar, or rejected Sediment, is thrown upon the parts; and consequently, the more raw our meat and drink

drink is taken, and the weaker the ferment of the stomach is, not thoroughly volatizing the nutritive Juyce, the more of this *tartareous* Sediment is, by the Streiners and Filters of the several parts of the body, left behind, which encreaseth the *Duelech*, gives beginning to Obstructions, Dropsies, Imposthumations, &c.

Now from what stones these *Sabulous Ramenta* are, I know not, and at present have not a *Microscope* by me, to make Observation of the various shapes thereof; and though Masons tell us, That the same stone differently cut, nay, though with the same Tools, doth by various reflections, give several, and somewhat distinguishable colours: yet here the water only (as we may suppose) running over, or along the *superficies* of a *Quarry*, or other Stones, cannot penetrate into the inward parts thereof, and so cannot make several colours from one stone. Therefore it's more probable, That these Concretions are from several stones, sands, or earths. And if it were water turned into earth, according to the Experiment of an ingenious Friend of mine, communicated to that great Naturalist, Squire *Boyl*, it would retain much what the same colour and figuration of parts, but here the parts separated, seem to the unassisted eye, to be very dissimular, some gritty and hard, others soft and impalpable, some bright and glittering, as if from *Talke*, scales of *Venice-glass*, or other bright Mineral stones, and others are more dull.

The last of these stony Concretions, which was separated, and which one would have expected to have been the most subtile and impalpable powder, I found to consist of larger siz'd particles, and those bright and sparkling, as if they had been razings of Crystals: And that these should lie *dormant*, and incon-

inconspicuous in the water, after so many previous separations of powders much more impalpable than it self, gives cause to suspect that there is a variety of pores in the body of water, and those two of different sizes and *angularities*, wherein *fabulous* Bodies and Salts of various shapes, may lie undiscovered to the bare eye, in the texture of water. Therefore if *Microscopes* were so contriv'd, as to take a view of Liquors, we might discover many considerable things, pertinent to the solving diverse Philosophical *Phænomena's*, whereof we are yet ignorant.

Now as to that which remains, after all these *fabulous* separations, I mean the *esurine* Salt, which I call the Essence of *Scarborough-Spaw*, is a kind of *alumno-nitrous* Salt, or *Sal Hermeticum*; and therefore where you meet in our *Hydrological* Discourse, with the word [*Aluminous Salt*] you are to read it, *Alumno-nitrous Salt*, or *Nitro-hermetical Salt*. This Salt, if duly ordered, is *CrySTALLINE*, shoots into long *Stiria's*, and brancheth it self forth in curious shapes, upon the bottom of the glass, which I cause to be crystaliz'd in *Balneo Mariae*.

Its taste is more discernably nitrous than otherwise, yet is a such a sort of a *Nitro-hermetical* Salt, as being exactly dried, and cast upon hot coals or a glowing *Spatula*, takes no flame; nor doth it melt, nor boyl in a *Crucible*, as that Nitre Dr. *Wittie* speaks of doth: for he means the common Nitre, to be had in Shops (*viz.* Such as is added to Cerots and Plaisters, as his own words testifie.) Now this *Hermetical* Salt in the *Spaw*, flows not in a *Crucible*, in a strong fire, but keeps in a dry white body, and loseth some of its taste by the force of fire. Therefore what we have said against Nitre, in our foregoing Discourse, is to be understood the common inflammable

ble Nitre, which is vulgarly used. And it's very probable, that there may be a Magnetical earth, not far from the breaking forth of this Spring, upon which, the Aereal Nitre (whether in the *Atmosphere* upon the surface, or in Caverns of the earth) doth centre it self, which joyning issue with a Mineral acidity, may become a competent cause, for the production of all Mineral Springs: For (to my knowledge) there are some Bodies to be found in the World, that are truly Magnetical of the Universal Spirit, or *Nitro-hermetical* Salt, which flotes otherwise indiscernably in the Air; which very thing, rightly understood, is no small Key to the *Hermetick* Philosophy, which I shall, at present, purposely wave further to discourse upon.

Now the Proportion of this Nitrous Salt, to the whole bulk of the water, after the separation of all these stony Concretions, is no less (according to my compute) than as one is to one hundred twenty eight: so that it is at least but the one hundred twenty eighth part of the whole. This pure Salt (which as to taste is somewhat bitter) dissolv'd, is that I call the Essence of the *Scarborough-Spaw*; a little of which, taken in a glass of White or Rhenish Wine, or in a glass of simple Spring-water, will (as I have tryed) purge gently by Stool: and without doubt is that, by whose efficacy, whatever the *Spaw*-water drunk alone effects, is performed, and that too with a triple advantage.

First, In that the *fabulous* Concretions are separated by Art (which sometimes precipitating otherwise (as I said before) upon the bowels, may do harm.) And secondly, the smallness of its quantity prevents that hazard to some bodies, which the gulping down great draughts of water may produce. For such large

large quantities of *Spaw*-water, as are usually drunk, doth in some Constitutions too much dilute the Ferment, debilitate the Digestions, and vitiate the tone of the Membranous parts, both of the stomach and other bowels, and so cause Fevers, Dropsies, defluxions of Rheume, &c.

And lastly, The fitness of it to be taken at any Season of the Year, whether Winter, Spring, Summer, or Autumn; whereas the waters from the *Spaw* it self, are only to be drunk in the Summer-Season. But this Essence may not only be drunk then, which at that time of the year, may be taken in three, four or five glasses of any good simple Spring-water; especially to those who cannot come to the *Spaws*: but also may conveniently enough be taken in the Winter, and in the Spring (when the *Spaw*-water it self cannot with efficacy be drunk, because too much diluted with Rain or Snow-water) in a glass of White or Rhenish-Wine, as I said; which though it be taken in such a proportion, as not to work sensibly by stool, yet will it have a safe and innocent, though an insensible, Operation.

Yea, What Diseases the *Spaw*-water is found proper for, being taken from the Fountain, for the same the Essence thereof is also as proper, and according to all reason most effectual, as in the Scurvy, Scorbutical *Asthma's*, Dropsie, *Hypocondriack* Melancholy, Fevers, Obstructions of the Vessels in Women, and Diseases thence depending, together with several other Distempers, as may be further seen in the Discourse it self.

The Essence of the *Spaw* hath this priviledge in the Cure (at least in the assistance of the Cure) of Fevers, above that of the whole body of the *Spaw*-water, viz. That it may be administred in a glass of Wine,

Wine, and so may readily be carried to absterse the vessels of the blood, and other spurious fermenting liquors, from their *Heterogeneities* and *recremental Tartar*; which, if taken in the whole bulk of water, would be prejudicial and dangerous on all hands, as hazarding too sudden a stop to the Fermentation, and thereby occasion a preposterous stifling of the volatile Spirits, before they can work themselves into a new state, by separating *Heterogene* parts, which they constantly attempt in most Fevers.

Also if this *Spaw*-water contribute (as it's highly extoll'd to that purpose) to the making Women fruitful (by removing Obstructions of the Womb, the frequent concurring cause of Barrenness) it doth it (I say) by virtue of this *Nitro-hermetick Salt*, viz. That which I call the *Essence of the Spaw*; which indeed, is much what of the same nature with that Salt which fructifies all Plants and Fruits of the Earth, makes all Soyls multiply in great plenty, and may give probability of fruitfulness to Women, by opening those Obstructions which frequently hinder Conception.

By the help of this concentrated Essence, every simple Current-Spring may be made a *Spaw*, by dissolving a competent quantity hereof, in four, five, six or seven glasses of any Spring-water in the Summertime, which may also not a little increase its purgative quality, in as much as the *Spaw*-waters often Purge downward by their very weight, witness the *Virgoline-Spaw* at *Knarsborough*, which rarely purgeth any other way, than downwards by its very weight, either by Stool or Urine. So that this very Essence, might very properly be taken in the same Sweet *Spaw*, at the Season of the Year; and so you might have the virtue of both *Spaws* in one, which would
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probably thereby answer more general *Indications*.

And lastly, By the help of our aforesaid *Ternary of Medicines*, together with some other good *Specificks*, joyning issue (at the Season of the Year) with the use of the *Scarborough-Spaw-water*, might effect very considerable Cures in most Chronick Diseases; or the same, with the Essence of the same *Spaw*, to be taken in the Winter, Spring, or any other Season of the Year, might not improbably effect the like Cures.

FINIS.

FRAGMENT I.

Insert this first Fragment between the 29th Section [ending with these words, the extinction of the vital flame] and the beginning of the 30th Section [thus, 30. This fourth Digestion, as I conceive, &c.] in Page 75. Part II.

NOW this regurgitated *Latex* or separated *Serum* of the Blood, let forth of the *Abdomen*, by tapping the Bellies of such are afflicted with that sort of Dropsie call'd *Ascites*, is a limpid liquor; whose *Tabes* (whereby it depraves and corrupts the membranous parts where it restagnates) is not originally from the Liver, that part so generally accus'd by the *Galenists* for being the grand Patron of Dropsies, is apparent by matter of Fact, both by the observation of the profound Inquisitor into Nature, *Baptista Van Helmont*, who upon the dissection of Bodies, whose Diseases were Dropsies, has found the Liver firm and sound, both in colour and solidness of *Parenchyme*: The same, an ingenious and skilful Physician, an Acquaintance of mine, told me, that upon his cutting up a Dropsical Body, which Dropsie had worn away the Patient with an *Atrophy* of all the parts like a *Tabes*, The limpid Liquor

that he took forth of his Belly was near two Gallons; the Liver was sound and good as any could be, so likewise his Heart; but the Spleen was discoloured and vitiated, the *Omentum* was black, rotten and foetid. Some of this Liquor he caus'd to be plac'd over a fire, to evaporate some of the moisture; the remaining part thicken'd: and was as stiff as a gelly, and that of a very green colour. It was of so stiff a consistence as that a spoon might have stood in it. Which Experiment evinceth the truth of these following Considerations.

First, That the Liver is innocent in the *genesis* of Dropsies, *In Hydrops insons est hepar*, saith *Helmont*; and therefore all Medicines that are directed in the *Galenical* road, to the opening Obstructions in the Liver, or to any other Indication thereof, in order to the Cure of Dropsies, is shot at random, yea quite by the mark: and so to be rejected as frivolous.

Secondly, That the Spleen is a part somewhat concern'd in the Fabrick of Dropsies (to which I may without doubt add the Stomach) the Blood doth not undergo those wonted Circulations or Cohobations upon its own fixt body or *Caput mort* in the Spleen; and so consequently doth not receive those due Separations, nor is enrich'd with the indowments of that noble Ferment, which doth not a little contribute to the *Eucrasia* of the Blood: Hence the Blood in part becomes too much diluted and waterish.

Thirdly, That that, which completes the waterishness of the Blood is Obstructions of the Reins, which has a double indication; and that is, first the small quantity of Urine that Dropical Persons make; and next, the restagnation of a great quantity of this rejected *Latex* into the *Abdomen*, which actually swells the Belly.

Fourthly,

Fourthly, That in tract of Time, when this re-stagnating *Serum* begins to putrefie (as it will in no long time do, both because it is extravasated, as also because it wants a volatizing and embalming Ferment) it corrupts also and perisheth the *Omentum*, turns it black and foetid; then the whole Mass falls upon the Bowels, spoys their Tone, and brings Death. Hence the Rot in Sheep, is nothing else but, if I may so call it, a Dropsical *Ascites*, from a re-stagnating *Latex*, which by moistness of waterish Ground, or continuance of wet Weather, putrefies and corrupts the *Kell* and so other Bowels, thence Death. For in continuance of time it Rots the principal Bowels of the Body.

Lastly, That if this re-stagnating *Serum* have continued so long without a genuine reduction, or at least a separation by the proper Conduits, viz. the *Ureters*, Pores, *Siedge*, &c. as to begin to undergo a putridness, by whose foetid sulphureous Odour, or corrosive Saltneis, the *Omentum* becomes corrupt and mortified; that then all hopes of Cure is over, because of the perishing of the Bowels, by the *Analytical* putridness of the Spurious *Latex*, which suffering all the thin parts to be evaporated by the natural heat of the adjacent parts, retains only a depraved Sulphur and Salt, which by a retrograde *Analysis* corrupts the Bowels, hinders the Circulation of the Blood, perverts the tone of all the Membranous parts, and in the conclusion stiffes all the Spirits, both Vital and Animal, whence Death. But if this be taken before the corruption of the *Omentum*, or any other Bowels, it may then more readily be cured, I mean sent away by passages and chanel's adapted as proper *Emunctories* for that purpose. But to return.

But if this spurious Acidity, &c.

FRAGMENT II.

Between the ending of the second Section and the beginning of the third, in Page 136. read this second Fragment.

BUt if you pour Oyl of Tartar upon some of the fresh water, it makes a frisking spawny motion, which with a little Gaul turning Purple, and thereto a few drops of Oyl of Vitriol be poured, it instantly boyls, and immediately becomes clear again; upon which if Oyl of Tartar *per Deliquium*, Spirit of Harts-horn, and any other volatile saline Spirit, either simple or aromatiz'd with Essences, be again poured, it causeth a frisking motion with a sudden dash of Purple upon the middle of the glass, which no sooner appeareth, but vanisheth, and becomes clear; which, with a little Oyl of Vitriol, makes a fresh boyling, heaving up some Particles of the water above the glass, from the Intestine Ebullition of the Salts, each contending with other. Which water I have, after this was done, drunke off in the presence of some Gentlemen and others, before whom I made the Experiment; which left such a pleasant relish upon the Palate and *Larynx*, as that all the water I drunk after, for that Morning, went down with much more delightfulness and sweetness then was wonted.

FRAGMENT III.

In the third Section of Page 136. between the words [as alumenish Solutions will do] and the following words, viz. [and that in effect, &c.] read this third Fragment as in a Parenthesis.

(Saving that they do not admit of a Milky Coagulation by the addition of Oyl of Tartar, Spirit of Harts-Horn, or the like, as those of Allom Springs do)

FRAGMENT III.

In Page 157. Part II. line the second, ending with these words [to all parts] between them and the beginning of the third line, in these words [likewise Baths are of efficacy, &c.] read this fourth Fragment.

Also against Dropsies, especially cold Springs or Baths : and that because it's found by Experiment, that Bathing promotes both Urine and Sweat. For a Man shall scarce well get out of the water but
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he shall be inclinable to Urine, and then Sweating doth most frequently follow; which, if promoted by some inward Diaphoretick, will help notably to transpire the superfluous *Latex*, especially in that sort of Dropsie called *Anasarca*, where the Blood is too much diluted, and the *Lympheducts* obstructed in the habit of the body. So that two grand Indications of Dropsies, and perhaps a third (*& tria sunt omnia*) are hereby answered (*viz.*) Stopping or difficulty of Urine; secondly, Obstructions of the Pores; and lastly, Debility of Ferments in their separative Functions, by the intense coldness of the waters, which reminds the Reins, *Ureters* and *Sphincter* of the Bladder, of their Duty, opens the Pores, making both (especially by the concurring help of inward Diaphoreticks) the inward and outward parts perspirable; and lastly, so fortifies the Digestive Ferments, as that it begets a very good Appetite to Meat, by whetting the Ferment of the Stomach, and by promoting the *Sysole* of all the Membranous parts, thereby separating the accumulated *Sordes*.

Likewise Baths, &c.

AB 14

FINIS.

Monsieur
Daford